OKI

OKIPAGE 14ex
LED Page Printer

Maintenance Manual

ODA / OEL / INT

Rev.2 2001-03-19

Document Revision History

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PREFACE

This Maintenance Manual describes the field maintenance methods for LED Page Printers.

This manual is written for use by service persons. Please note that you should refer to the Printer Handbook for the handling and operating methods of the equipment.

CONTENTS

1. CONFIGURATION

1.1 System Configuration

OKIPAGE 14ex consists of control and engine blocks in the standard configuration, as shown in Figure 1-1.

In addition, the options marked with asterisk(*) are available.

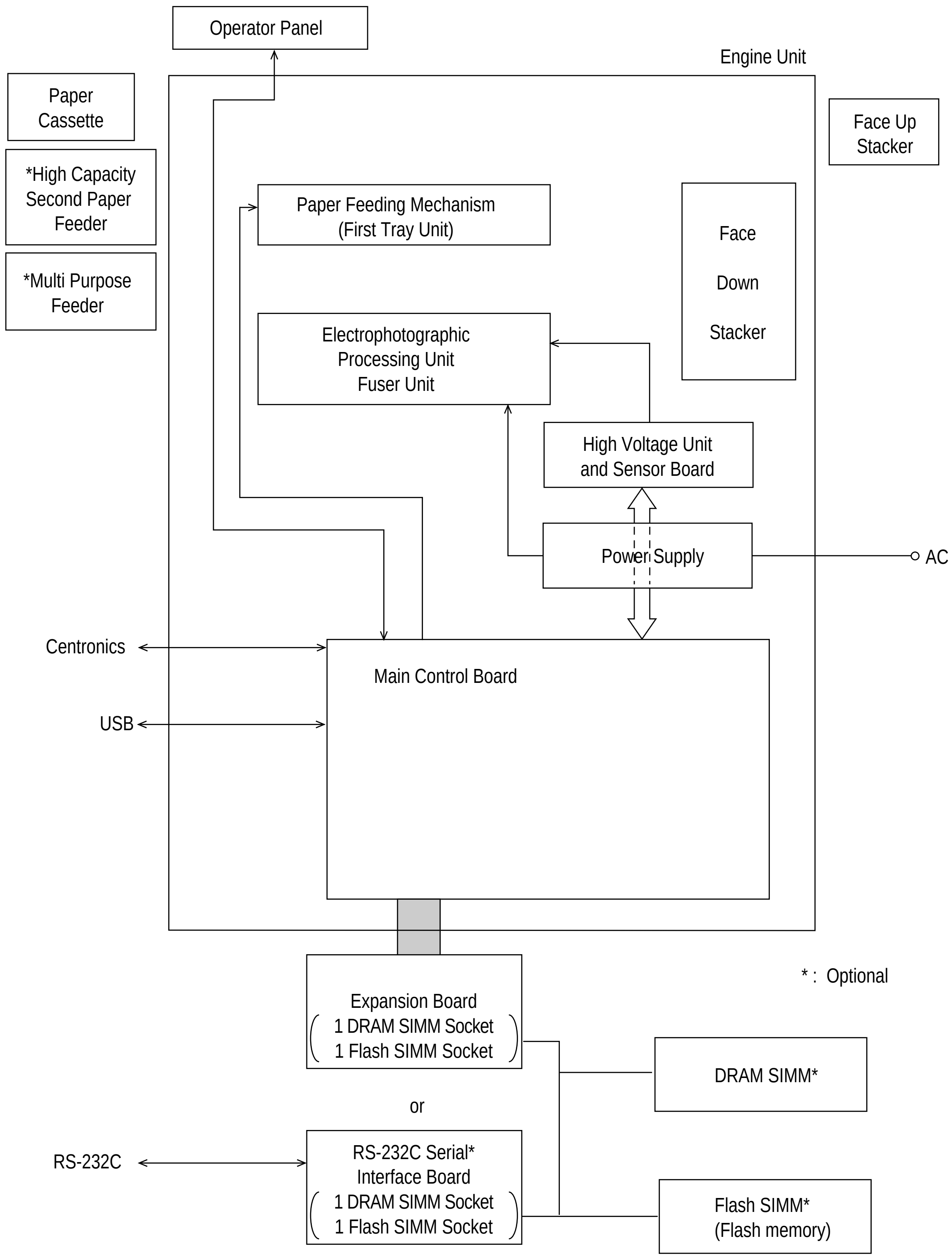

Operator Panel
Engine Unit
Paper Cassette
*High Capacity Second Paper Feeder
*Multi Purpose Feeder
Face Up Stacker
Paper Feeding Mechanism (First Tray Unit)
Face Down Stacker
Electrophotographic Processing Unit Fuser Unit
High Voltage Unit and Sensor Board
Power Supply
AC
Centronics
USB
Main Control Board
Expansion Board
1 DRAM SIMM Socket
1 Flash SIMM Socket
* : Optional
DRAM SIMM*
or
RS-232C
RS-232C Serial* Interface Board
1 DRAM SIMM Socket
1 Flash SIMM Socket
Flash SIMM* (Flash memory)

Figure 1-1

1.2 Printer Configuration

The printer unit consists of the following hardware components:

- Electrophotographic Processor
- Paper Feeder
- Controller
- Operator Panel
- Power Supply Unit

The printer unit configuration is shown in Figure 1-2.

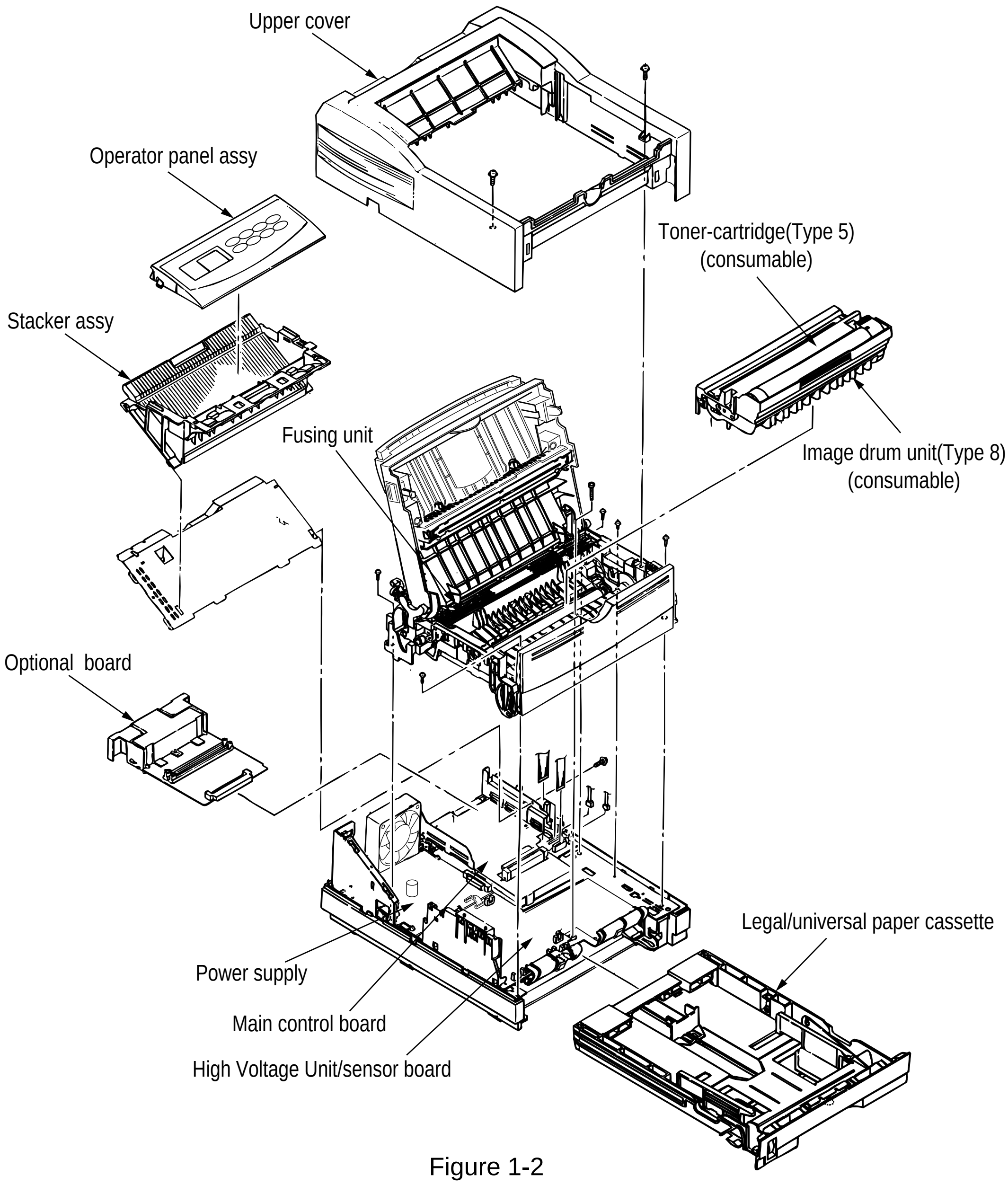
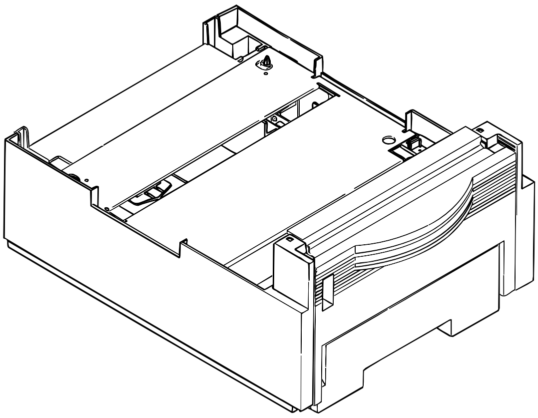


Figure 1-2

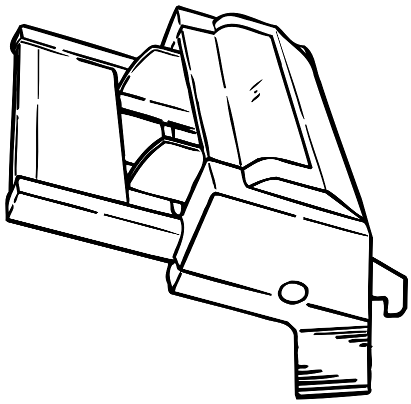
1.3 Optional Configuration

The options shown below are available for use with OKIPAGE 14ex. These are available separately from the printer unit.

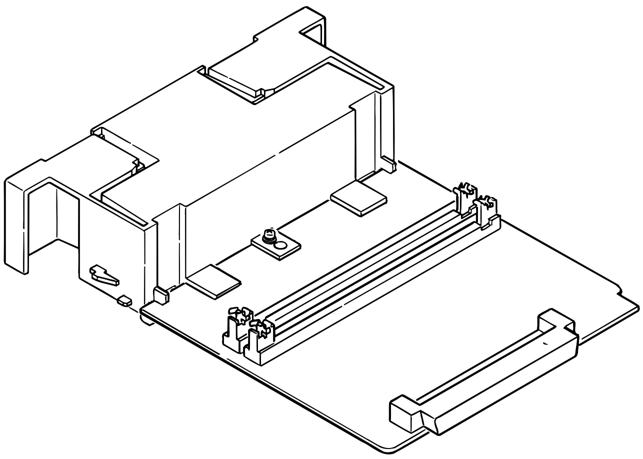
(1) High Capacity Second Paper Feeder



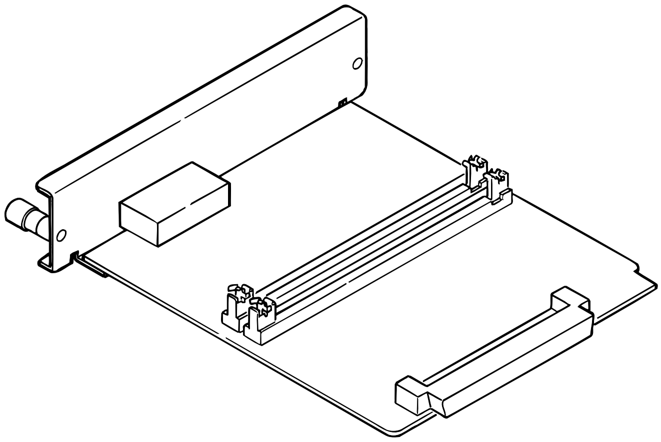
(2) Multi Purpose Feeder



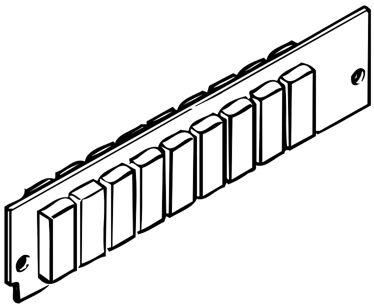
(3) Expansion Board



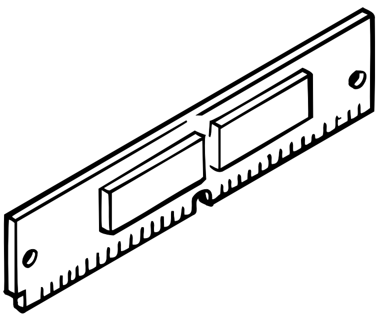
(4) RS-232C Serial Interface Board



(5) DRAM SIMM Memory
DRAM SIMM memory is available with memory of 8MB,16MB,32MB [Oki Data genuine].
The access time of SIMM memories are 60ns, 70ns, 80ns, and 100ns.



(6) Flash SIMM
Flash SIMM is available with memory of 4MB, 8MB and 16MB.



1.4 Specification

(1)	Type	Desktop
(2)	External dimensions	Height 8.5” (215 mm) Width 13.6” (345 mm) Depth 15.6” (395 mm)
(3)	Weight	Approx. 9kg
(4)	Developing method Exposing method	Dry electrophotography LED stationary head
(5)	Paper used	<Type> • Standard paper – Xerox 4200 (20 lbs) • Application paper (manual face-up feed) – Label – Envelope – OHP paper (transparency) <Size> • Standard sizes – Letter – Legal* [*Without Multi Purpose Feeder (Option)] – Legal-13* – Executive – COM-10** [**manual feed and Multi Purpose Feeder (Option) only] – Monarch** – DL** – C5** – A4 – A5 – B5 (JIS) – A6 • Applicable sizes – Width: 3.4” to 8.5” (86 to 216 mm) – Length: 5.5” to 14” (140 to 355.6 mm) <Thickness> – Automatic feed : 16 to 28 lbs (60 to 105 g/m^2) – Manual feed : Label, OHP paper (transparency) Envelope (24 to 28lbs)
(6)	Printing speed	Continuous printing : 14 pages per minute with Letter size paper. [Except, Multi purpose Feeder (11ppm)] Warm-up time : 45 seconds typical at room temperature [68˚F (20˚C), AC 120/230 V]. First page print time : 7.5 seconds typical for the Letter size paper after warm-up.
(7)	Paper feeding method	Automatic feed or manual feed
(8)	Paper delivery method	Face down/face up
(9)	Resolution	600 × 600 dots/inch 600 × 1200 dots/inch
(10)	Power input	120 VAC + 5.5%, -15% 230 VAC ± 10%

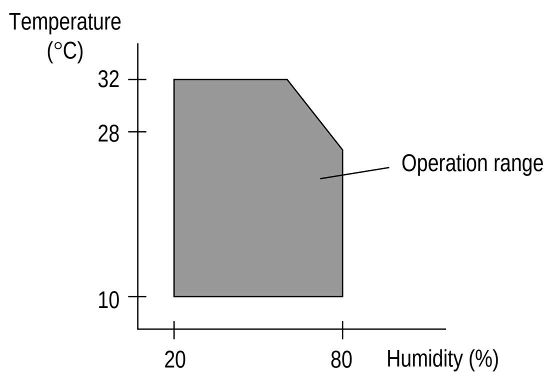
(11) Power consumption

		120VAC	230VAC
Peak	:	Approx. 600W	Approx. 600W
Typical operation	:	Approx. 340W	Approx. 340W
Idle	:	Approx. 75W	Approx. 66W
Power save mode	:	Approx. 10W	Approx. 11W

(12) Temperature and humidity

	In operation	Power off mode	During Storage	Unit
Temperature	50-90 (10-32)	32-110 (0-43)	14-110 (–10-43)	˚F (˚C)
Humidity	20-80	10-90	10-90	%RH
Maximum wet bulb temperature	77 (25)	80.4 (26.8)	———	˚F (˚C)
Minimum difference between wet and dry bulb temperatures	35.6 (2)	35.6 (2)	———	˚F (˚C)

1. Storage conditions specified above apply to printers in packed condition.
2. Temperature and humidity must be in the range where no condensation occurs.



(13) Noise

During operation: 53 dB (A) or less
Standby: 38 dB (A) or less
Quiet mode: Back ground level

(14) Consumables

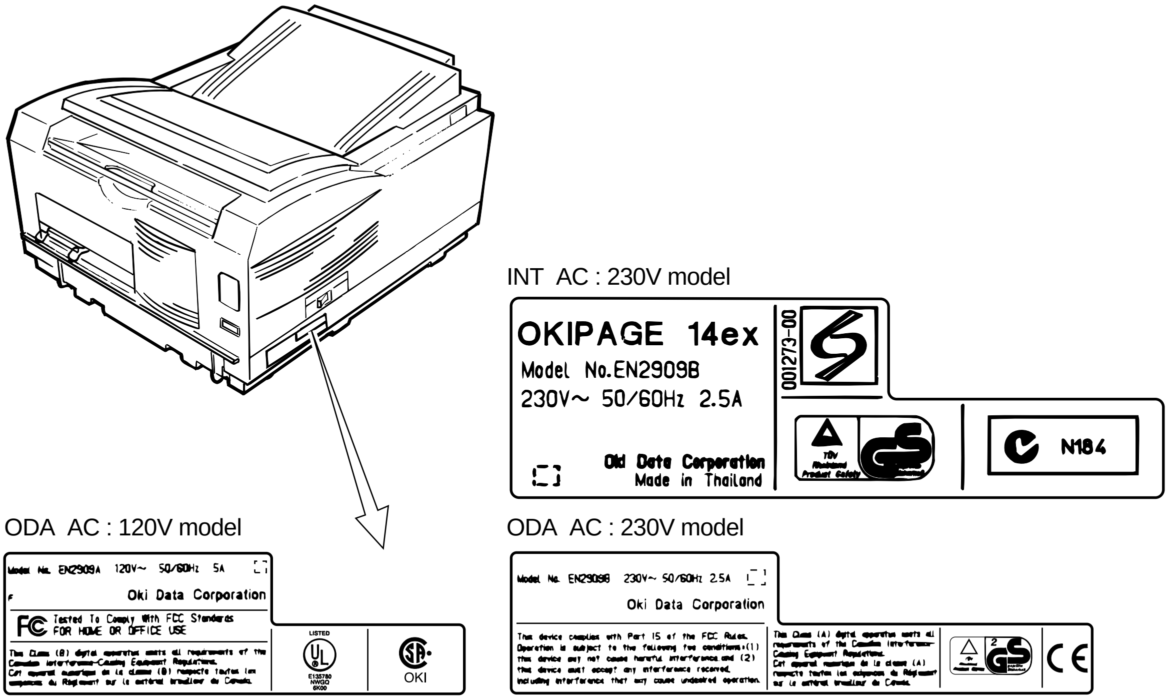
Toner cartridge kit
ODA : 2,000 (5% duty) 4,000(optional 4K Toner 5% duty)
OEL/INT : 2,500 (5%duty) 4,000(optional 4K Toner 5% duty)

Image drum cartridge
20,000 (at continuouts printing)
14,000 (3 page/job) without Power Save
9,000 (1 page/job) without Power Save
8,000 (1 page/job) with Power Save
(Minimum)

1.5 Safety Standards

1.5.1 Certification Label

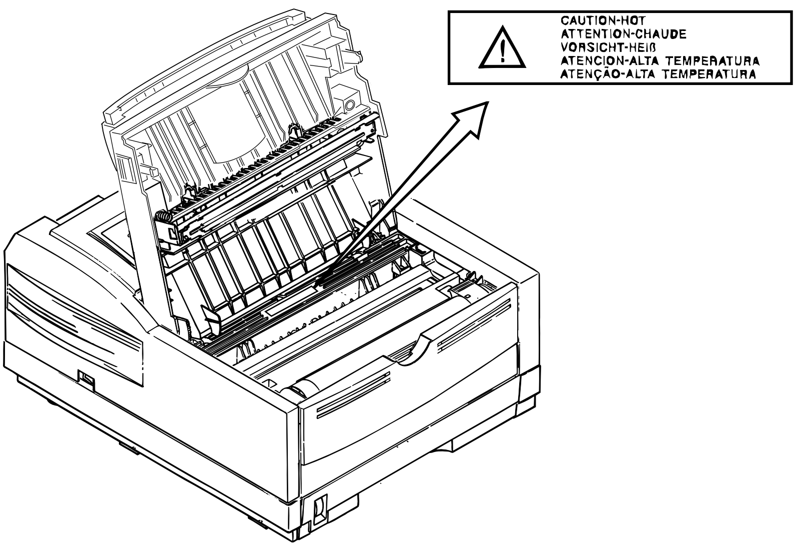
The safety certification label is affixed to the printer in the position described below.



1.5.2 Warning Label

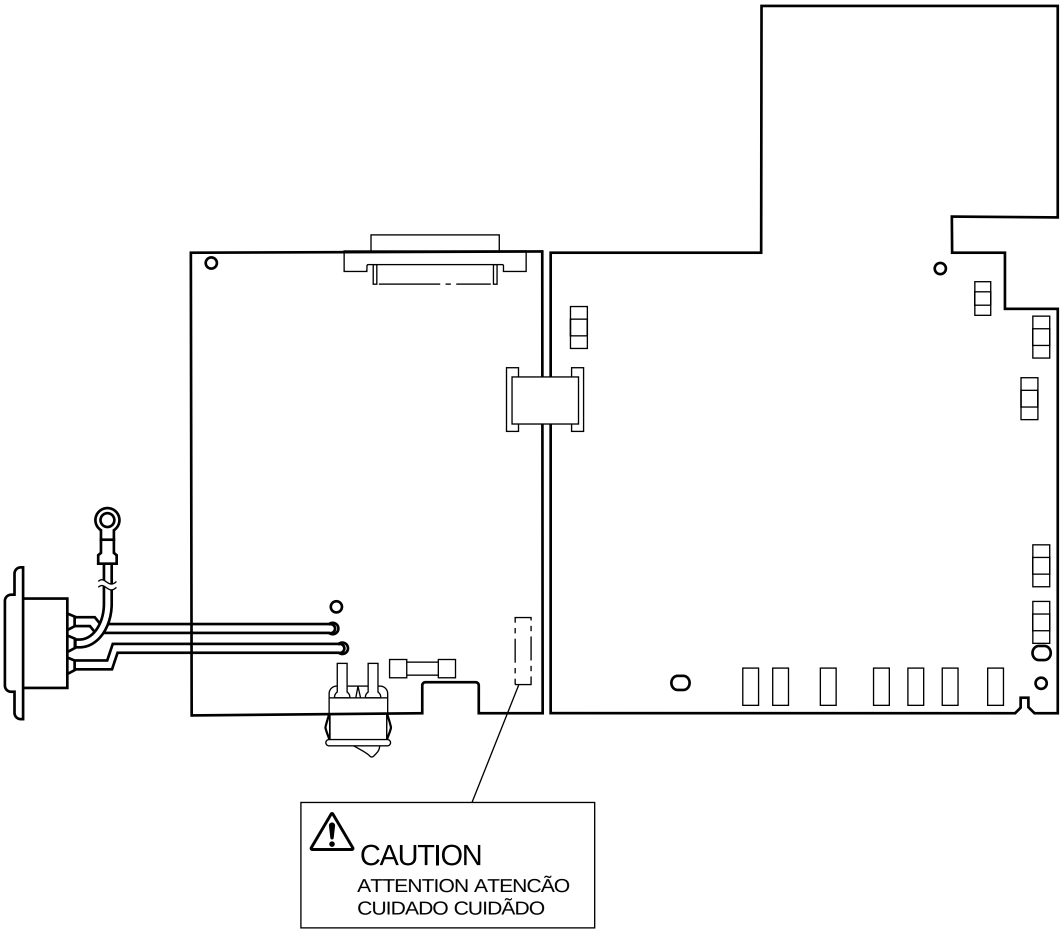
The warning labels are affixed to the sections which may cause bodily injury.

Follow the instructions on warning labels during maintenance.



1.5.3 Warning/Caution Marking

The following warning and caution markings are made on the power supply/sensor board.



ENGLISH
Heatsink and transformer core present risk of electric shock. Test before touching.
FRENCH
Le dissipateur thermique et le noyau du transformateur présentent des risques de choc électrique. Testez avant de manipuler.
SPANISH
Las disipadores de color el núcel del transformador pueden producir un choque eléctrico. Compruebe antes de tocar.
PORTUGUESE
O dissipador de calor e o núcleo do fransiormador apresentam risco de choque elétrico. Teste antes de focar.

ENGLISH
Circuits maybe live after fuses open.

FRENCH
Il se peut que les circuits soient sous tension une fois que les fusibles ont éfé rerirés.

SPANISH
Las circuitos pueden estar activos una vez que se hayan abierio los fusibles.

PORTUGUESE
Os circuitos podem estar energizados após os fusiveis se queimarem.

2. OPERATION DESCRIPTION

OKIPAGE 14ex consists of a main control board, a power supply/sensor board, an operator panel, an electrophotographic process mechanism, and revision for illumination of LED head.

The main control board receives data via the host I/F, it then decodes, edits and stores the data in memory. After completing the editing of a single page of data, it references the font memory and generates bit image data, which is transferred to the LED head in one dot line units.

Through the electrophotographic process mechanism, the data is printed on the paper.

The operator panel is used for operations and status display.

OKIPAGE 14ex block diagram is shown in Figure 2-1.

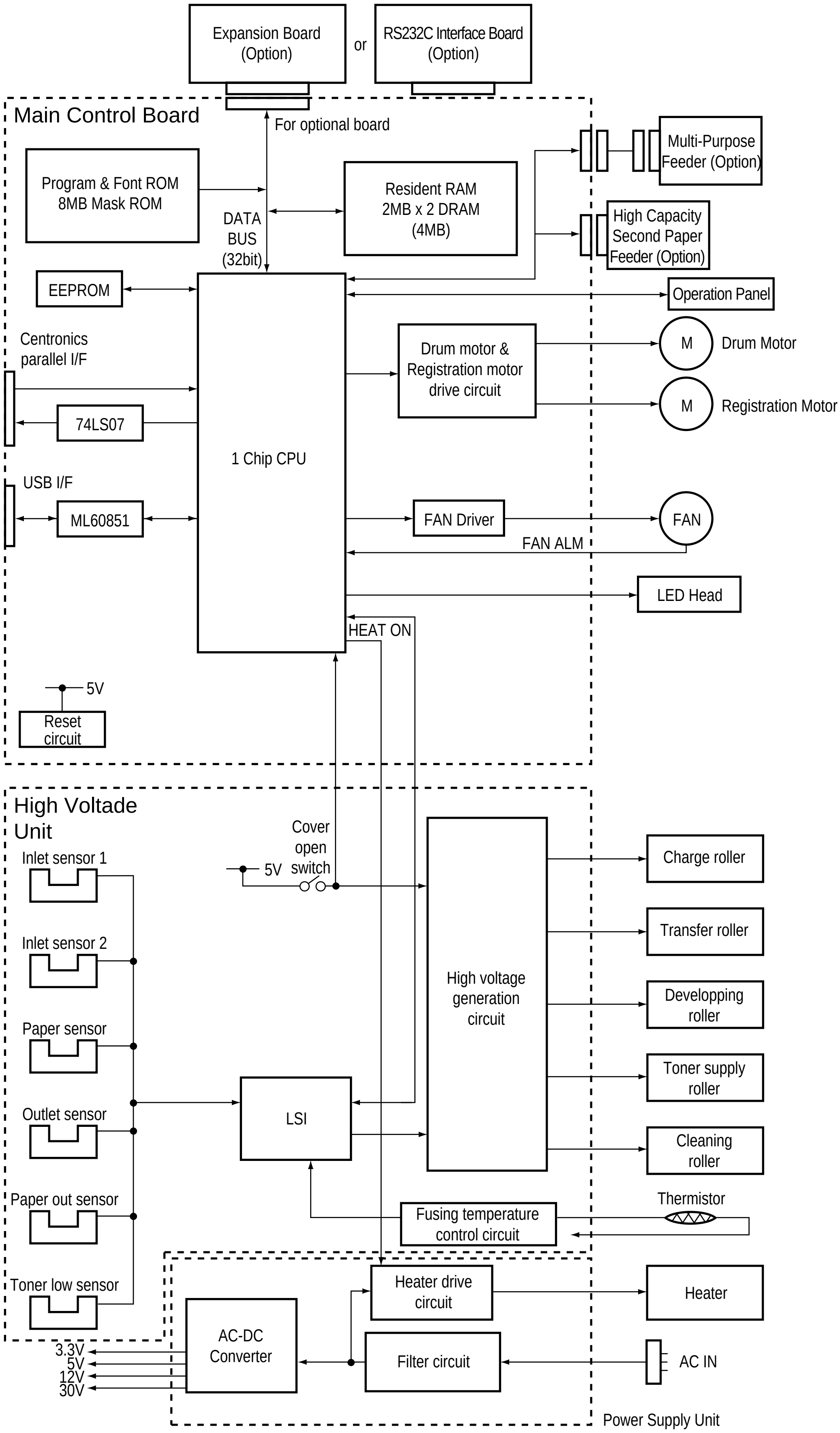


Figure 2-1 OKIPAGE 14ex Block Diagram

2.1 Main Control Board

The main control board consists of a single chip CPU, two program/font ROMs, four DRAMs, an EEPROM, a host interface circuit, and a mechanism driving circuit.

(1) Single chip CPU

The single chip CPU is a custom CPU (32-bit internal bus, 32-bit external bus, 49.766-MHz clock) which incorporates the RISC CPU and its peripheral devices, and has the following functions:

(2) Program and Font ROMs

Built-in device	Function
Chip select controller Bus controller DRAM controller	Control of ROM, DRAM and I/O device
DMA controller	Transfer of image data from DRAM to video output port
Parallel interface controller	Control of Centronics parallel interface
Serial interface controller	Control of RS-232C serial interface
Video output port LED STB output port	Control of LED head
Timer	Generation of various control timing Monitoring of paper running and paper size
Serial I/O port	Control of operator panel, EEPROM, and options
I/O port	Input and output of sensor and motor signals

The Program and Font ROMs store the equipment program and various types of fonts. Mask ROM is used as Program and Font ROMs. The mounting locations of these Program and Font ROMs vary depending on the type of the ROMs.

(3) DRAM

The DRAM is a 4MB resident memory on the main control board that stores edited data, image data, DLL data and macro data.

(4) EEPROM

4,096-bit Electrically Erasable PROM (EEPROM), is loaded with the following kinds of data:

- Menu data
- Various counter data (page counter, drum counter)
- Adjusting parameters (LED head drive time, print start position, paper feed length)

(5) Parallel Interface

Parallel data is received from a host system via parallel interface which conforms to the IEEE1284 specification.

(6) USB Interface

Serial data is received from a host system via USB which conforms to the USB 1.1 specification.

2.2 Power Supply/Sensor Board

The power supply/sensor board consists of an AC filter circuit, a low voltage power supply circuit, a high voltage power supply circuit, heater drive circuit, and photosensors.

(1) Low Voltage Power Supply Circuit

This circuit generates the following voltages.

Output voltage	Use
+5 V	Logic circuit supply voltage
+30 V	Motor and fan drive voltage and source voltage for high-voltage supply
+12 V	Source voltage for high-voltage supply
+3.3V	LED head supply voltage

(2) High Voltage Power Supply Circuit

This circuit generates the following voltages required for electrophotographic process from +5 V, according to the control sequence from the main control board. When cover open state is detected, +5 V supply is interrupted automatically to stop the supply of all high-voltage outputs.

Output	Voltage	Use	Remarks
CH	-1.3 KV	Voltage applied to charging roller	
DB	-265 V/+300 V	Voltage applied to developing roller	
SB	-500 V/ 0 V	Voltage applied to toner supply roller	
TR	+500 V to +4.5 KV/-1100 V	Voltage applied to transfer roller	Variable
CB	+400 V/-1350 V	Voltage applied to cleaning roller	

(3) Photosensor

The photosensor mounted on this power supply/sensor board monitors the status of paper being fed through the printer during printing.

The sensor layout diagram is shown in Figure 2-2.

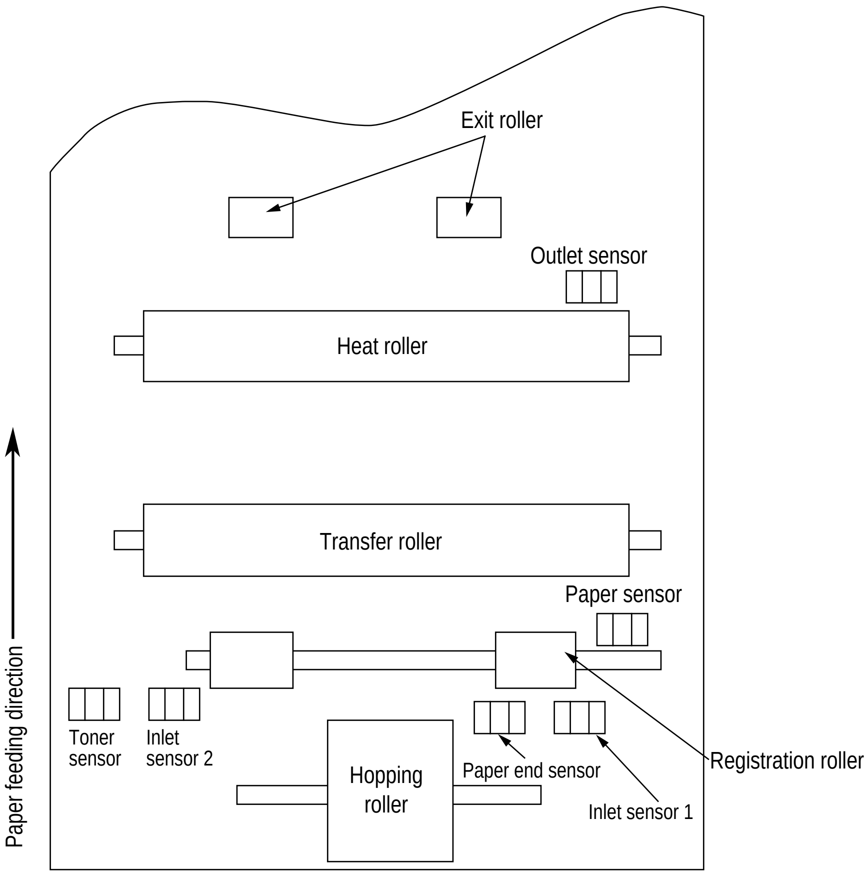


Figure 2-2

Sensor	Function	Sensing state
Inlet sensor 1	Detects the leading part of the paper and gives the monitor timing for switching from hopping operation to feeding operation. Monitors paper feeding situation and paper size based on the paper arrival time and running time.	ON : Paper exists. OFF : No paper exists.
Intel sensor 2	Detects the paper width.	ON : A4 or larger OFF : Smaller than A4
Paper sensor	Detects the leading portion of the paper. Monitors the paper feeding situation.	ON : Paper exists. OFF : No paper exists.
Outlet sensor	Monitors the paper feeding and size according to the time of arrival to and leaving past the sensor.	ON : Paper exists. OFF : No paper exists.
Paper end sensor	Detects the end of the paper.	ON : Paper exists. OFF : No paper exists.
Toner low sensor	Detects the lack of toner.	- - - - -

2.3 Electrophotographic Process

2.3.1 Electrophotographic Process Mechanism

This mechanism actuates the printing of image data supplied by the main control board on the paper by electrophotographic process.

The layout of the electrophotographic process mechanism is shown in Figure 2-3.

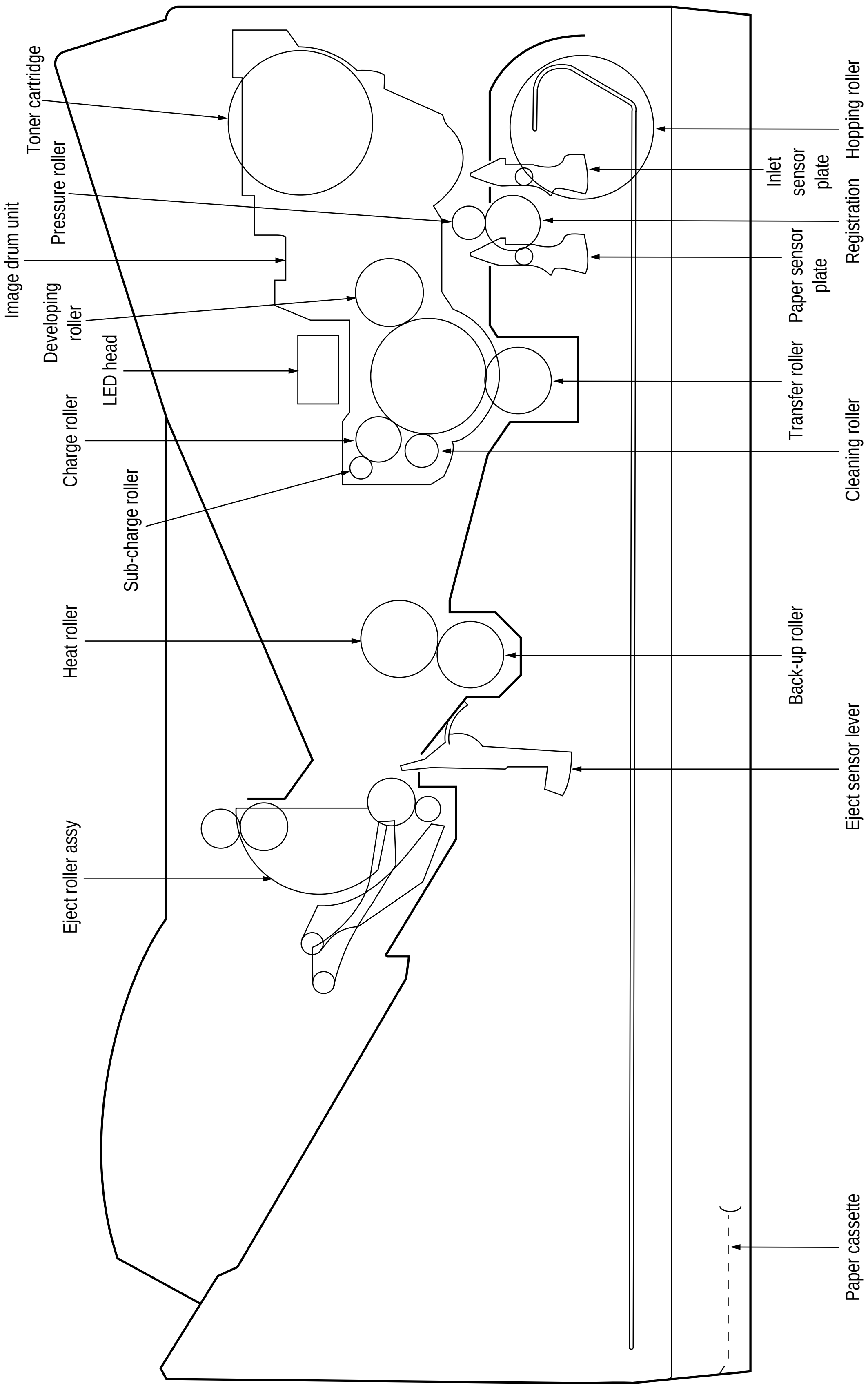

Toner cartridge
Pressure roller
Image drum unit
Developing roller
LED head
Charge roller
Sub-charge roller
Heat roller
Eject roller assy
Hopping roller
Inlet sensor plate
Registration roller
Paper sensor plate
Transfer roller
Cleaning roller
Back-up roller
Eject sensor lever
Paper cassette

Figure 2-3

(1) Image Drum Unit

The image drum unit consists of a sensitive drum, a charger, and a developer. The unit forms a toner image on the sensitive drum, using a electrostatic latent image formed by the LED head.

(2) Registration Motor

The registration motor is a pulse motor of 48 steps/rotation with two-phase excitement by the signal from the main control board. It drives the hopping and registration rollers via two one-way clutches according to the direction of rotation.

(3) Main (Drum) Motor

The main or drum motor is a pulse motor of 48 steps/rotation with two-phase excitement by the signal from the main control board and is the main motor of this mechanism.

(4) LED Head

Image data for each dot line from the main control board is received by the shift register and latch register. The 4992 LED's are driven to radiate the image data on the image drum.

(5) Fuser

The fuser consists of a heater, a heat roller, a thermistor and a thermostat.

The AC voltage from the power supply/sensor board is applied to the heater controlled by the HEATON signal from the main control board. This AC voltage heats the heater. The main control board monitors the heat roller temperature via the thermistor, and regulates the heater roller to keep it at a designated temperature in the menu, depending on the thickness of the paper (tray 1&2: light=175~185°C, medium light=180~190°C, medium=185~195°C, medium heavy and heavy=195~205°C; manual feeding and power envelope feeder: light=165~180°C, medium light=170~185°C, medium=175~190°C, medium heavy=180~195°C, heavy=190~205°C, transparency = 170~185°C) by connecting or disconnecting the AC voltage supply to the heater.

When an abnormal rise of the heater roller temperature takes place, the thermostat of the heater voltage supply circuit becomes active and forcibly cuts the AC voltage supply.

The temperature setting of the fuser can be changed through operator panel setting.

2.3.2 Electrophotographic Process

The electrophotographic processing is outlined below. The electrophotographic printing process is shown in Figure 2-4.

① Charging

The surface of the image drum is charged uniformly with a negative charge by applying the negative voltage to the charge roller.

② Exposure

Light emitted from the LED head irradiates the negatively charged surface of the image drum. The surface potential of the irradiated portion of the image drum surface becomes lower, forming the electrostatic latent image associated with the print image.

③ Developing and toner recovery

When the negatively charged toner is brought into contact with the image drum, it is attracted to the electrostatic latent image by static electricity, making the image visible.

At the same time, the residual toner on the image drum is attracted to the developing roller by static electricity.

④ Transfer

When paper is placed over the image drum surface, the positive charge which is opposite in polarity to that of the toner, is applied to the reverse side of the paper by the transfer roller. The toner is attracted by the positive charge and is transferred onto the paper. This results in the transfer of the toner image formed on the image drum onto the paper.

⑤ Temporary cleaning

Residual toner which remains on the image drum without being transferred is evened out by the cleaning roller and is temporarily attracted to the cleaning roller by static electricity.

⑥ Fusing

The toner image transferred onto the paper is fused to the paper by heat and pressure.

An electrophotographic process timing chart is shown in Figure 2-5.

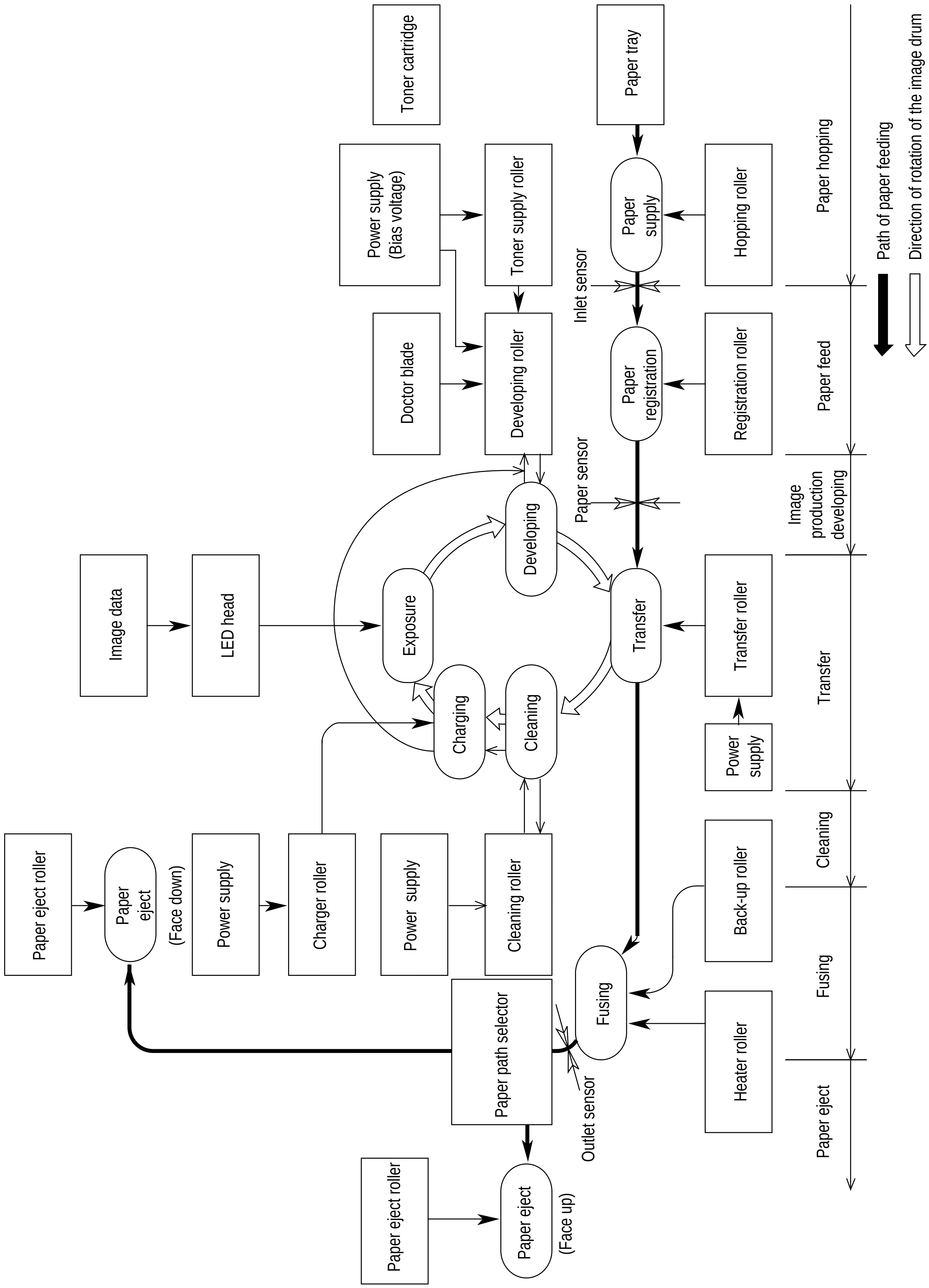

Toner cartridge
Paper tray
Power supply
(Bias voltage)
Toner supply roller
Paper supply
Hopping roller
Paper hopping
Path of paper feeding
Direction of rotation of the image drum
Inlet sensor
Doctor blade
Developing roller
Paper registration
Registration roller
Paper feed
Paper sensor
Image production developing
Image data
LED head
Developing
Exposure
Transfer
Transfer roller
Charging
Cleaning
Power supply
Transfer
Paper eject roller
Paper eject
(Face down)
Power supply
Charger roller
Power supply
Cleaning roller
Back-up roller
Cleaning
Fusing
Fusing
Paper path selector
Heater roller
Paper eject
Outlet sensor
Paper eject roller
Paper eject
(Face up)

Figure 2-4

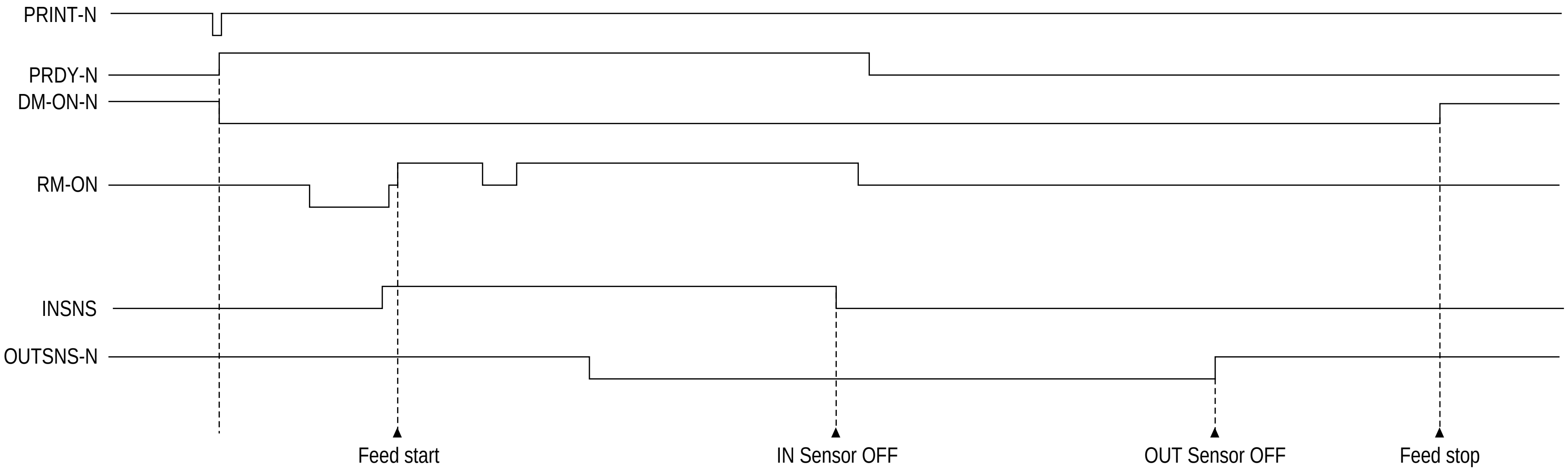
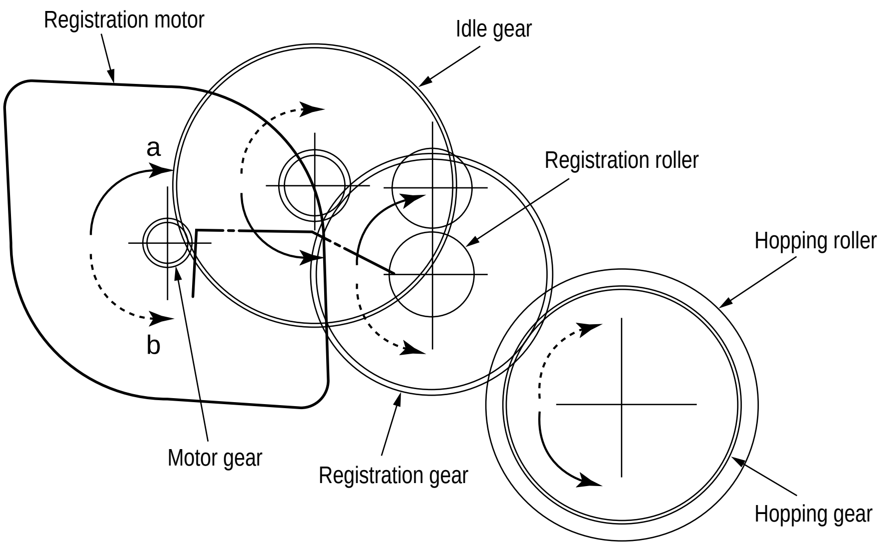

PRINT-N
PRDY-N
DM-ON-N
RM-ON
INSNS
OUTSNS-N
Feed start
IN Sensor OFF
OUT Sensor OFF
Feed stop

Figure 2-5

2.3.3 Process Operation Descriptions

(1) Hopping and Feeding

Hopping and feeding motions are actuated by a single registration motor in the mechanism as shown below:

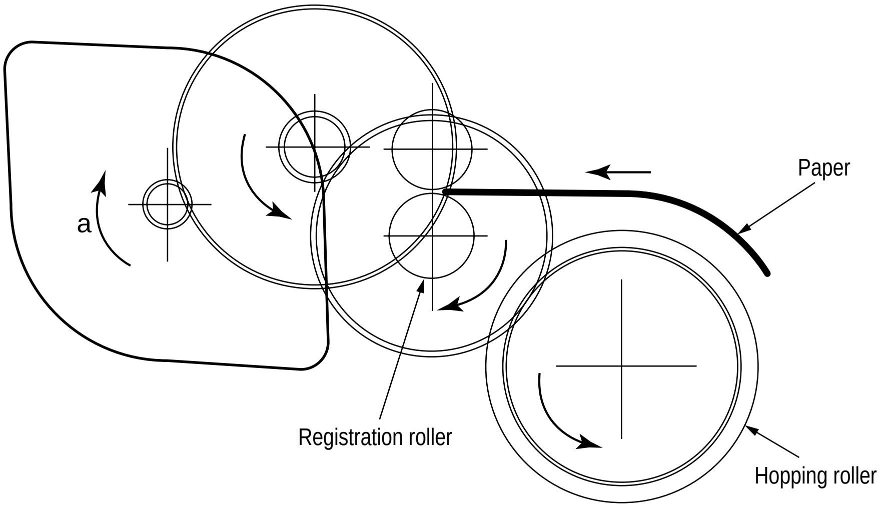


The registration motor turning in direction "a" drives the hopping roller. The registration motor turning in direction "b" drives the registration roller. The registration and hopping gears have one-way bearing, so turning any of these gears in the reverse direction will not transmit the motion to the corresponding roller.

(a) Hopping

① For hopping, the registration motor turns in direction "a" (clockwise direction) and drives the hopping roller to advance the paper until the inlet sensor turns on (in this case, the registration gear also turns, but the registration roller is prevented from turning by the one-way bearing).

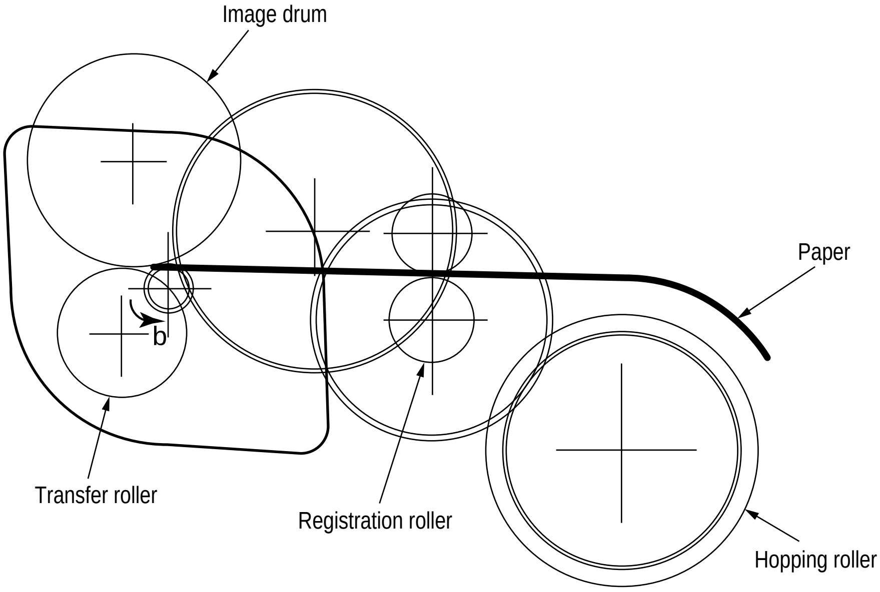
② After inlet sensor is turned on by the paper advance, the paper is further advanced to a predetermined distance until the paper hits the registration roller (the skew of the paper can thus be corrected).



(b) Feeding

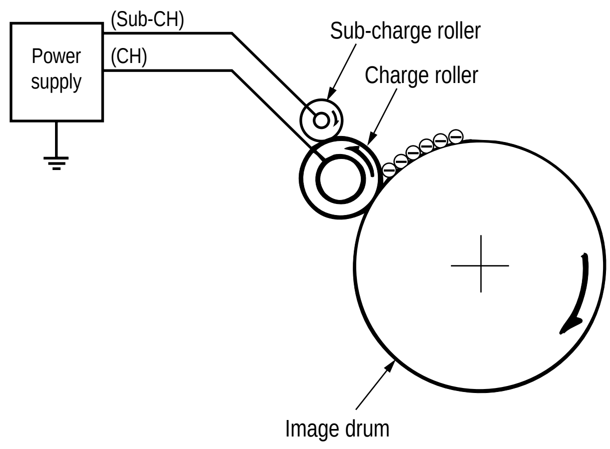
① When hopping is completed, the registration motor turning in direction "b" (counter-clockwise direction) drives the registration roller to advance the paper (in this case, the hopping gear also turns, but the hopping roller is prevented from turning by the one-way bearing).

② The paper is further advanced in synchronization with the print data.

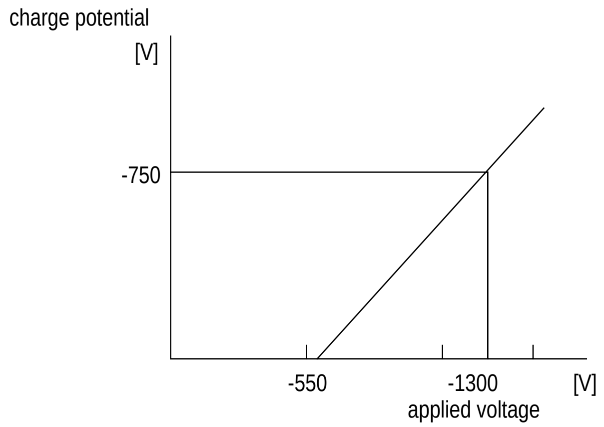


(2) Charging

Charging is actuated by the application of the DC voltage to the charge roller that is in contact with the image drum surface.

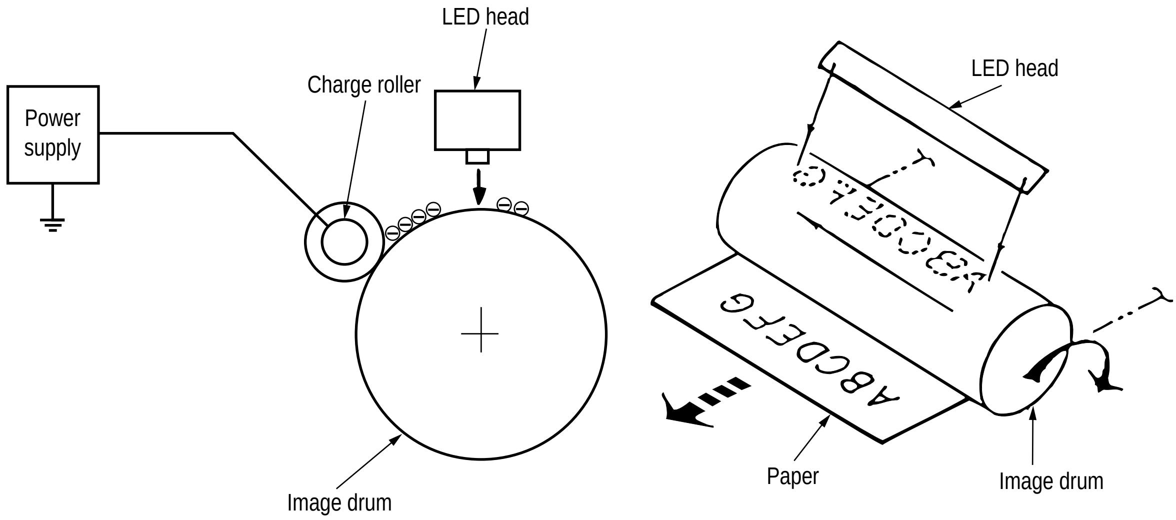


The charge roller is composed of two layers, a conductive layer and a surface protective layer, both having elasticity to secure good contact with the image drum. When the DC voltage applied by the power supply exceeds the threshold value, charging begins. The applied voltage is proportional to the charge potential, with offset of approximately –550V.

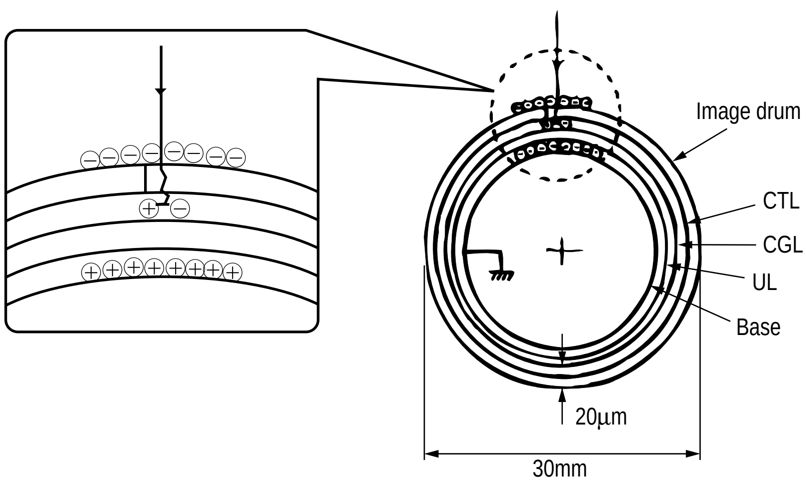


(3) Exposure

Light emitted by the LED head irradiates the image drum surface with a negative charge. The surface potential of the irradiated portion of the image drum drops, forming an electrostatic latent image associated with the image signal.



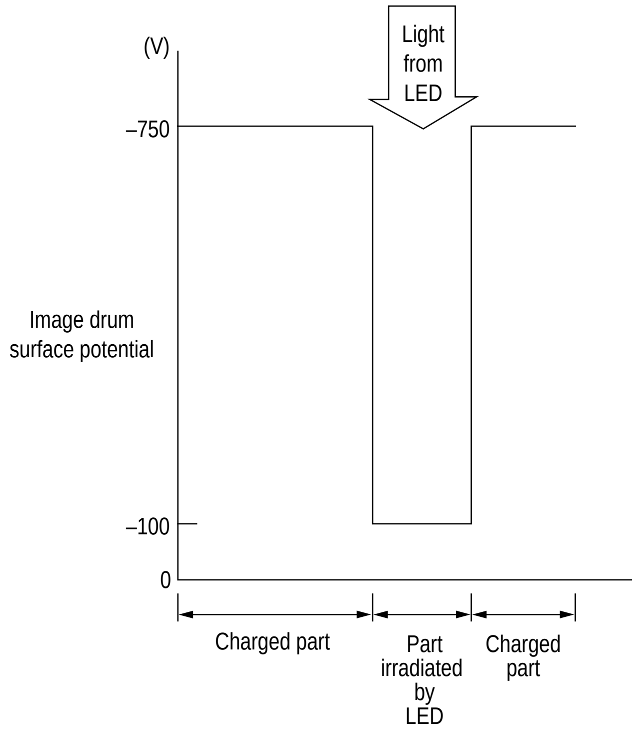
The image drum is coated with an underlayer (UL), a carrier generation layer (CGL), and carrier transfer layer (CTL) on aluminum base. The organic photo conductor layer (OPC), comprising CTL and CGL, is about 20 µm thick.



The image roller surface is charged to about –750 V by the contact charge of the charge roller.

When the light from the LED head irradiates the image drum surface, the light energy generates positive and negative carriers in the CGL. The positive carriers are moved to the CTL by an electrical field acting on the image drum. Likewise, the negative carriers flow into the aluminum layer (ground).

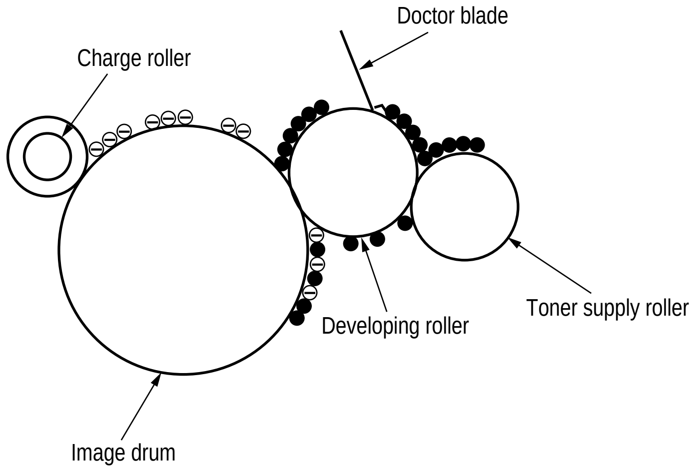
The positive carriers moved to the CTL combine with the negative charges on the image drum surface accumulated by the contact charge of the charge roller, lowering the potential on the image drum surface. The resultant drop in the potential of the irradiated portion of the image drum surface forms an electrostatic latent image on it. The irradiated portion of the image drum surface is kept to about –100 V.



(4) Developing

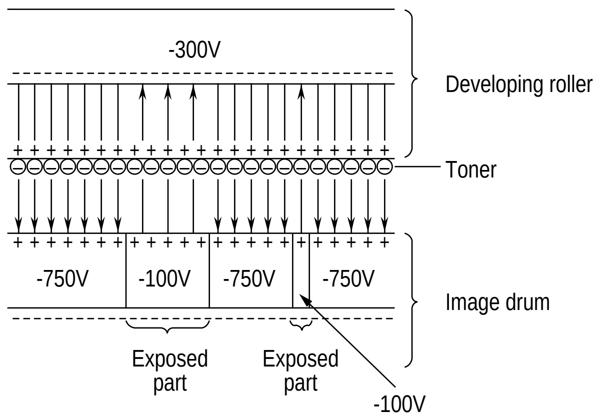
Toner is attracted to the electrostatic latent image on the image drum surface, converting it into a visible toner image. Developing takes place through the contact between the image drum and the developing roller.

① As the toner supply roller rotates while rubbing on the developing roller, a friction charge is generated between the developing roller and the toner, allowing the toner to be attracted to the developing roller (the developing roller surface is charged positive and the toner, negative).



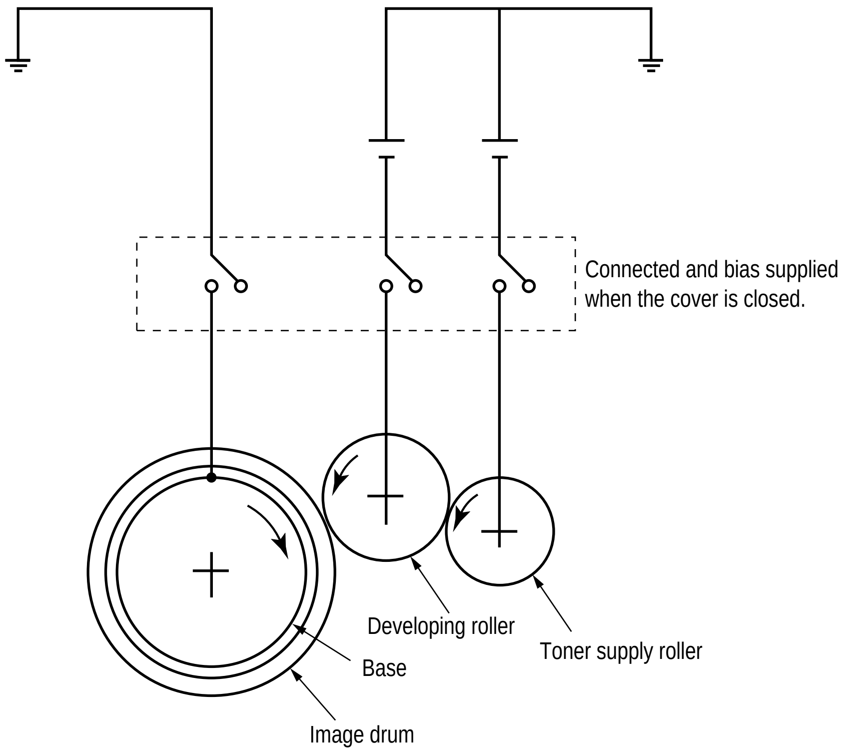
② The toner attracted to the developing roller is scraped off by the doctor blade, forming a thin coat of toner on the developing roller surface.

③ Toner is attracted to the exposed portion (low-potential part) of the image drum at the contact of the image drum and the developing roller, making the electrostatic latent image visible.



An illustration of activities at the contact point of the image drum surface and the developing roller (arrow marks denote the direction of the electrical field).

Note: The bias voltage required during the developing process is supplied to the toner supply roller and the developing roller, as shown below. –500 VDC is supplied to the toner supply roller, –265 VDC to the developing roller.

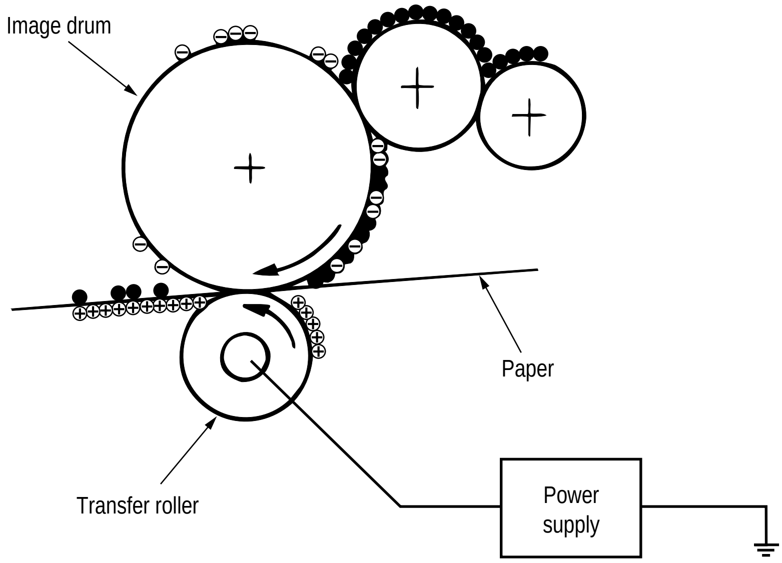


(5) Transfer

The transfer roller is composed of conductive sponge material, and is designed to get the image drum surface and the paper in a close contact.

Paper is placed over the image drum surface, and the positive charge, opposite in polarity to that of the toner, is applied to the paper from the reverse side.

The application of a high positive voltage from the power supply to the transfer roller causes the positive charge inducement on the transfer roller surface, transferring the charge to the paper as it contacts the transfer roller. The toner with negative charge is attracted to the image drum surface, and it is transferred to the upper side of the paper due to the positive charge on the reverse side of the paper.

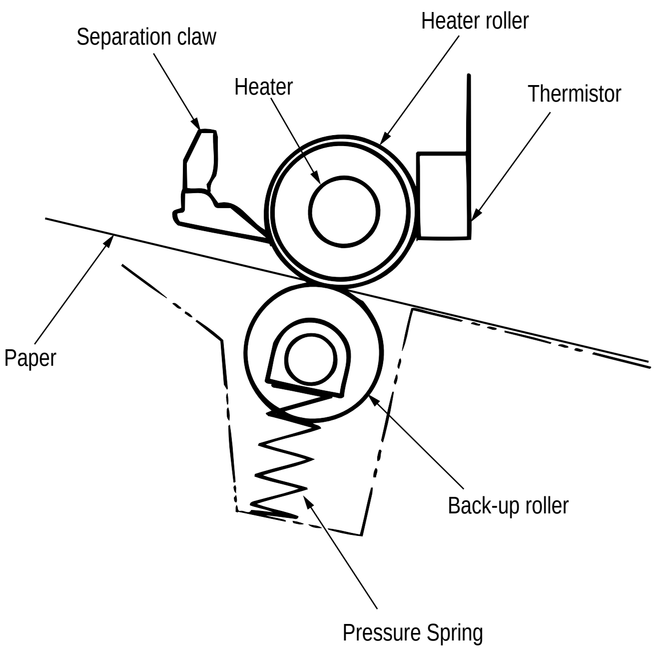


(6) Fusing

When the transfer is completed, the toner image is fused to the paper by heat and pressure as the paper with unfused toner image passes between the heater roller and the back-up roller. The heater roller with Teflon coating incorporates a 550W heater (Halogen lamp), which generates heat.

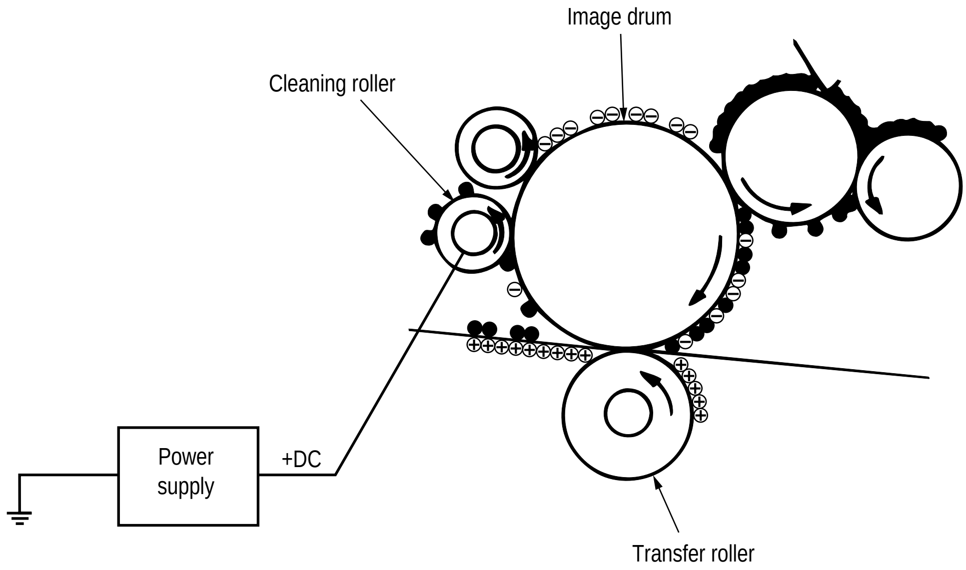
A thermistor which is in contact with the heater roller regulates the temperature of the heater roller to a designated temperature in the menu, depending on the thickness of the paper (tray 1&2: light=175~185°C, medium light=180~190°C, medium=185~195°C, medium heavy and heavy=195~205°C/manual feeding and power envelope feeder: light=165~180°C, medium light=170~185°C, medium=175~190°C, midium heavy=180~195°C, heavy=190~205°C, transparency = 170~185°C). A safety thermostat cuts voltage supply to the heater off by opening the thermostat in the event of abnormal temperature rises.

The back-up roller is held under a pressure of 3.76 kg applied by the pressure spring on each side.



(7) Cleaning

When the transfer is completed, the residual toner left on the image drum is attracted to the cleaning roller temporarily by static electricity, and the image drum surface is cleaned.



(8) Cleaning of rollers

The charge, transfer and cleaning rollers are cleaned for the following cases:

- Warming up when the power is turned on.
- Warming up after the opening and closing of the cover.
- When the number of sheets accumulated reaches 14 or more.
- When the print out operation ends.

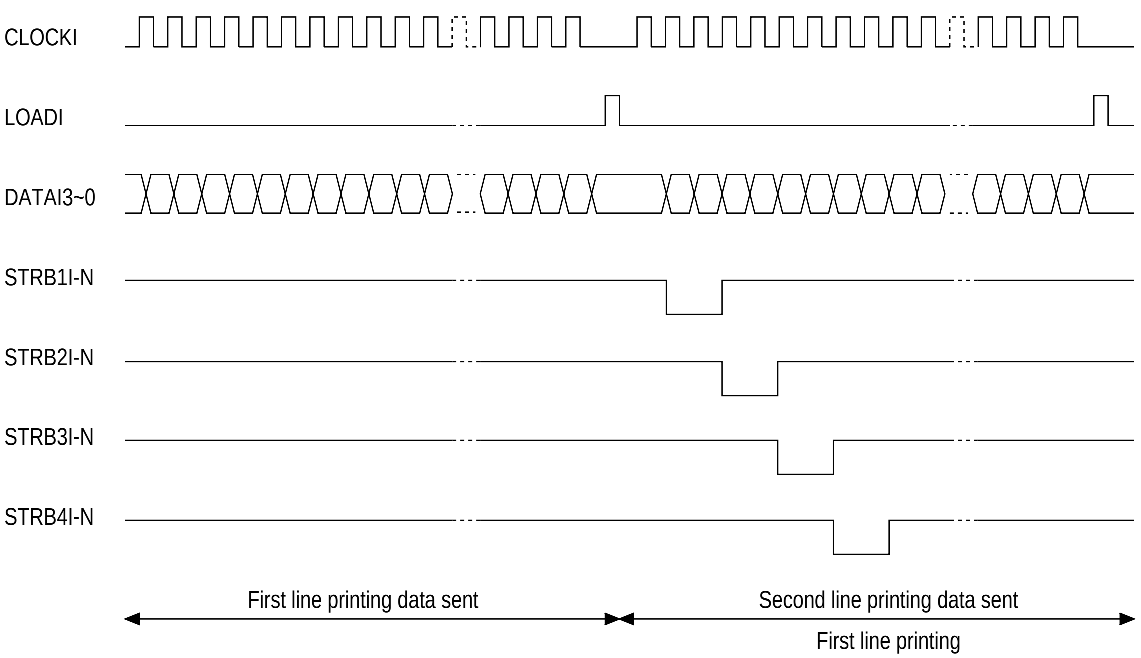
Changes in bias voltage applied to each roller move the attaching toner off the roller to the image drum and return it to the developer.

2.3.4 Revision of LED Head Illumination

An LED correcting head, which is capable of correcting the illumination of the LED for each dot, is being used in this printer. LED illumination correction function of 16 steps is carried out by using an EEPROM which is installed in the LSI that maintains the LED illumination correction values, and an LED correction drivers together as a pair.

The printing and correction data obtained from the CPU through four signal lines are sent to the LED array.
The printing operation timing chart is shown below.

Normal Mode Printing Timing Chart



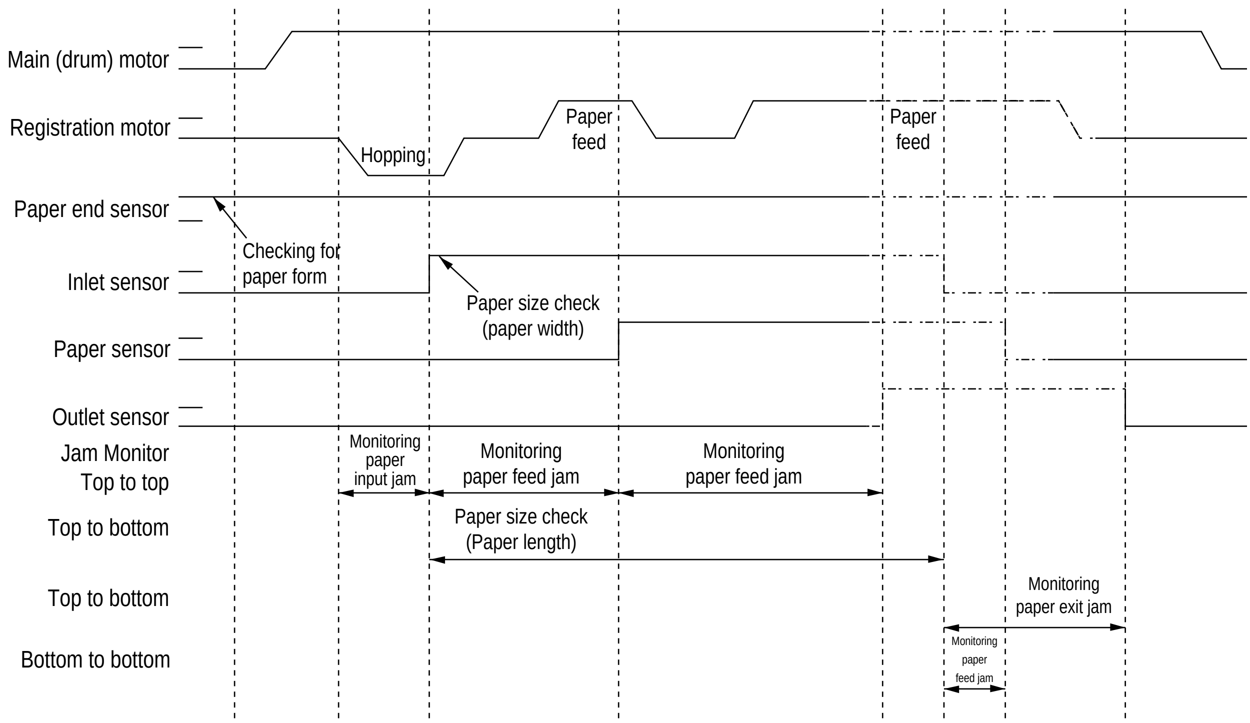
The printing operation is carried out in normal mode. Under ordinary circumstances such as when the power is turned on or when LOADI signal level is low, the normal mode is enabled.

The printing operation is carried out in the following sequence. First, the printing data DATAI3 through DATAI0 are stored, sequentially shifted, in the shift registers of the LED drivers, by the printing data synchronous clock, CLOCKI. Then the printing data stored in shift registers are latched by the high level pulse of LOADI. The latched printing data turns the LEDs on by STRB1I-N through STRB4I-N and actuates printing.

2.4 Paper Jam Detection

The paper jam detection function monitors the paper condition when the power is turned on and during printing. When any of the following conditions arises, this function interrupts the printing process. If any of the following errors is encountered, printing can be recovered by removing the jammed paper (by opening the upper cover, removing the jammed paper and closing the upper cover).

Error	Cause of error
Paper input jam	• The paper is in contact with the inlet sensor when the power is turned on. • After hopping operation is attempted three times, the leading edge of the paper does not reach the inlet sensor.
Paper feed jam	• The paper is in contact with the paper sensor when the power is turned on. • The leading edge of the paper does not reach the paper sensor within a predetermined feeding distance since the paper has reached the inlet sensor. • The trailing edge of the paper does not pass over the paper sensor within a predetermined feeding distance after the same has passed over the inlet sensor. • The leading edge of paper does not reach the outlet sensor within a predetermined feeding distance after the paper has reached the paper sensor.
Paper exit jam	• The paper is in contact with the outlet sensor when the power is turned on. • The paper does not pass over the outlet sensor within a predetermined feeding distance after the leading edge of the paper has reached the outlet sensor. • The paper size check for manual feeding finds that the paper size is free size.
Paper size error	• The size of the paper is monitored by the inlet sensor 1. The paper is not detected by the inlet sensor 1 within predetermined feeding distance. • The inlet sensor 2 detects that the size of the loaded paper is A4 or larger, or smaller than A4. The detected paper size differs from the paper size set by command or menu. • The paper size check for manual feeding finds that the paper size is free size.



Paper Feed Timing Chart

Paper Feed Check List

Type of error	Monitor			Standard value	Error	
					Plus	Minus
Paper feed error	Hopping start	to	In sensor on	72.0	36.0	–
Paper feed jam	In sensor on	to	Write sensor on	20.0	68.0	–
Paper feed jam	Write sensor on	to	Out sensor on	140.5	25.0	–
Paper size error	In sensor on	to	Out sensor on	Depends on the paper length	45.0	45.0
Paper exit jam	Out sensor on	to	Out sensor off	Depends on the paper length	45.0	45.0
Paper feed jam	In sensor off	to	Write sensor Off	22.2	22.0	–

Unit : mm

Note: Hyphen "-" in the table represents "not checked."

Paper Length List

Type	Paper length	Check range	
		Min	Max
A4	297.0	252.0	342.0
A5	210.0	165.0	255.0
B5	257.0	212.0	302.0
LETTER	279.4	234.4	324.4
LEGAL 13	330.2	285.2	375.2
LEGAL 14	355.6	310.6	400.6
EXEC	266.7	221.7	311.7
A6	148.0	103.0	193.0
Monarch	190.5	145.5	235.5
COM-9	225.4	180.4	270.4
COM-10	241.3	196.3	286.3
DL	220.0	175.0	265.0
C5	229.0	184.0	274.0
Free	110.1~355.6	65.0	400.6

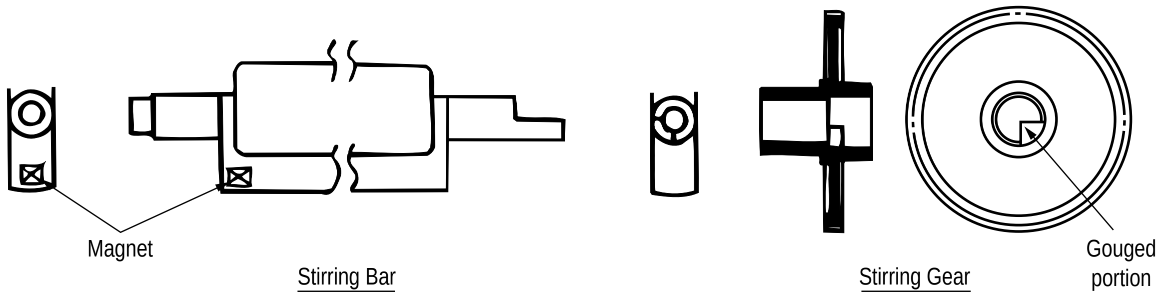
Unit : mm

2.5 Cover Open

When the stacker cover is opened, the cover open microswitch on the power supply/sensor board is turned off to cut +5V supply to the high voltage power supply circuit. This results in the interruption of all high-voltage outputs. At the same time, the CVOPN signal is sent to the main control board to notify that the microswitch is off, and the main control board carries out the cover open process.

2.6 Toner Low Detection

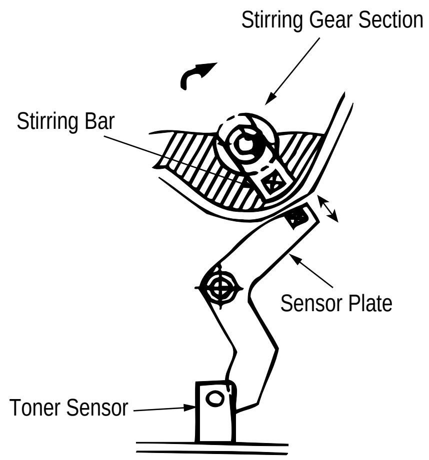
- Device
  The Toner Low Detection device consists of a stirring gear which rotates at a constant rate, a stirring bar and a magnet on the stirring bar. The stirring bar rotation is driven by the link to the gouged portion in the stirring gear.



- Operation
  Toner Low is detected by monitoring the time interval of the encounter of the magnet set on the sensor plate and the magnet on the stirring bar.

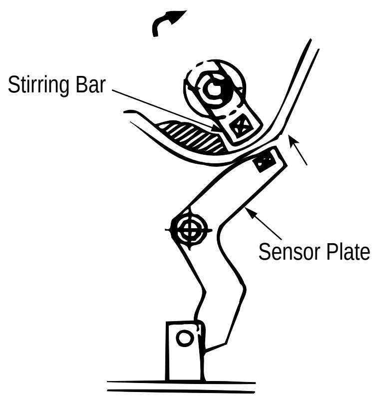
Operation during Toner Full state

- The stirring bar rotates due to the mechanical transmission of energy originating from the interlocking with the stirring gear.
- Even when the magnet on the stirring bar reaches the maximum height, the stirring bar is pushed by the stirring gear, since the other side is being dipped in the toner.

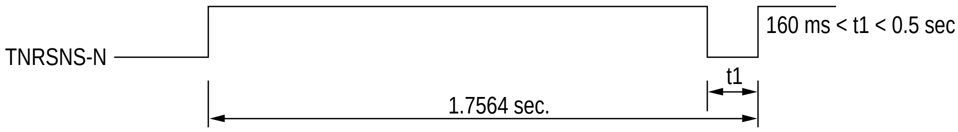


Operation during Toner Low state

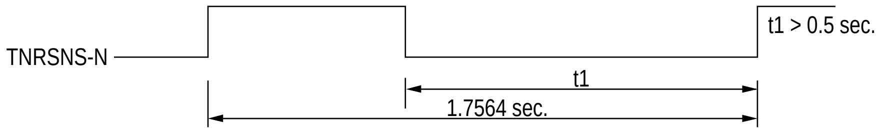
- When the stirring bar reaches the maximum height, it falls to the minimum height due to its own weight, since there is no resistance provided by the toner on the other side. Because of this, the time interval during which it is in encounter with the magnet of the sensor plate becomes longer. By monitoring this time interval, Toner Low state can be detected.



TONER FULL state



TONER LOW state



- When the Toner Low state is detected 2 times consecutively, Toner Low is established.
- When the Toner Full state is detected 2 times consecutively, Toner Low is cancelled.
- When there is no change with the toner sensor for 2 cycles (1.7564 sec. $\times$ 2) or more, then the Toner Sensor Alarm is activated.
- The toner sensor is not monitored while the main (drum) motor is in a halt.

3. PARTS REPLACEMENT

The section explains the procedures for replacement of parts, assemblies, and units in the field. Only the disassembly procedures are explained here. For reassembly, reverse the disassembly procedure.

3.1 Precautions for Parts Replacement

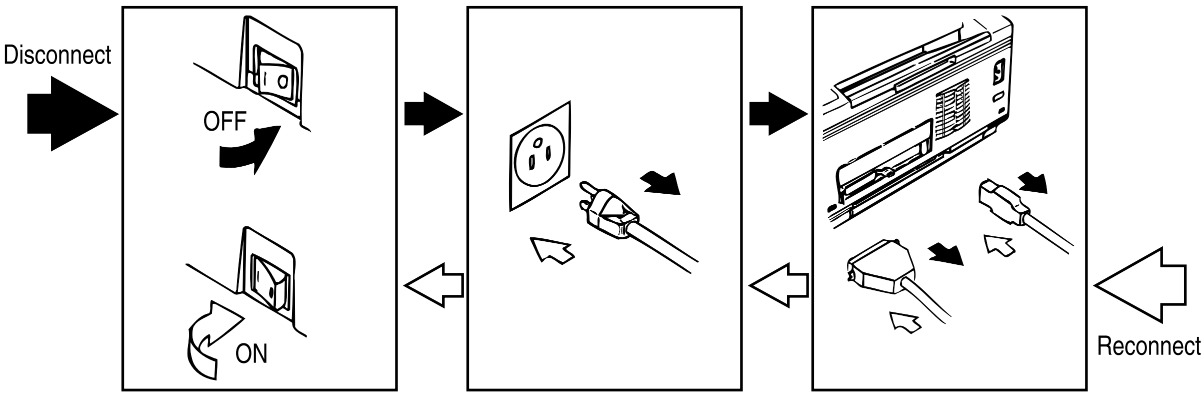
(1) Before starting to replace parts, remove the AC cord and interface cable.

(a) Remove the AC cord in the following sequence:

i) Turn off (“o”) the power switch of the printer
ii) Disconnect the AC inlet plug of the AC cord from the AC receptacle.
iii) Disconnect the AC cord and interface cable from the printer.

(b) Reconnect the printer in the following procedure.

i) Connect the AC cord and interface cable to the printer.
ii) Connect the AC inlet plug to the AC receptacle.
iii) Turn on (“l”) the power switch of the printer.



(2) Do not disassemble the printer as long as it is operating normally.

(3) Do not remove parts which do not have to be touched; try to keep the disassembly to a minimum.

(4) Use specified service tools.

(5) When disassembling, follow the laid out sequences. Parts may be damaged if these sequences are not followed.

(6) Since screws, collars and other small parts are likely to be lost, they should temporarily be attached to the original positions during disassembly.

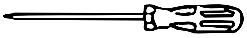
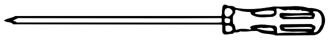
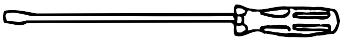
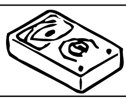
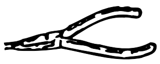
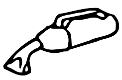
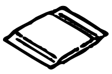
(7) When handling IC’s such as microprocessors, ROMs and RAMs, or circuit boards, do not wear gloves that are likely to generate static electricity.

(8) Do not place printed circuit boards directly on the equipment or floor.

[Service Tools]

The tools required for field replacement of printed circuit boards, assemblies and units are listed in Table 3-1.

Table 3-1 Service Tools

No.	Service Tools		Q' ty	Application	Remarks
1		No. 1-100 Philips screwdriver	1	2~2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3~5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		
8		LED Head cleaner	1	Cleans LED head	

3.2 Parts Layout

This section explains the layout of main components of the equipment.

[Lower base unit]

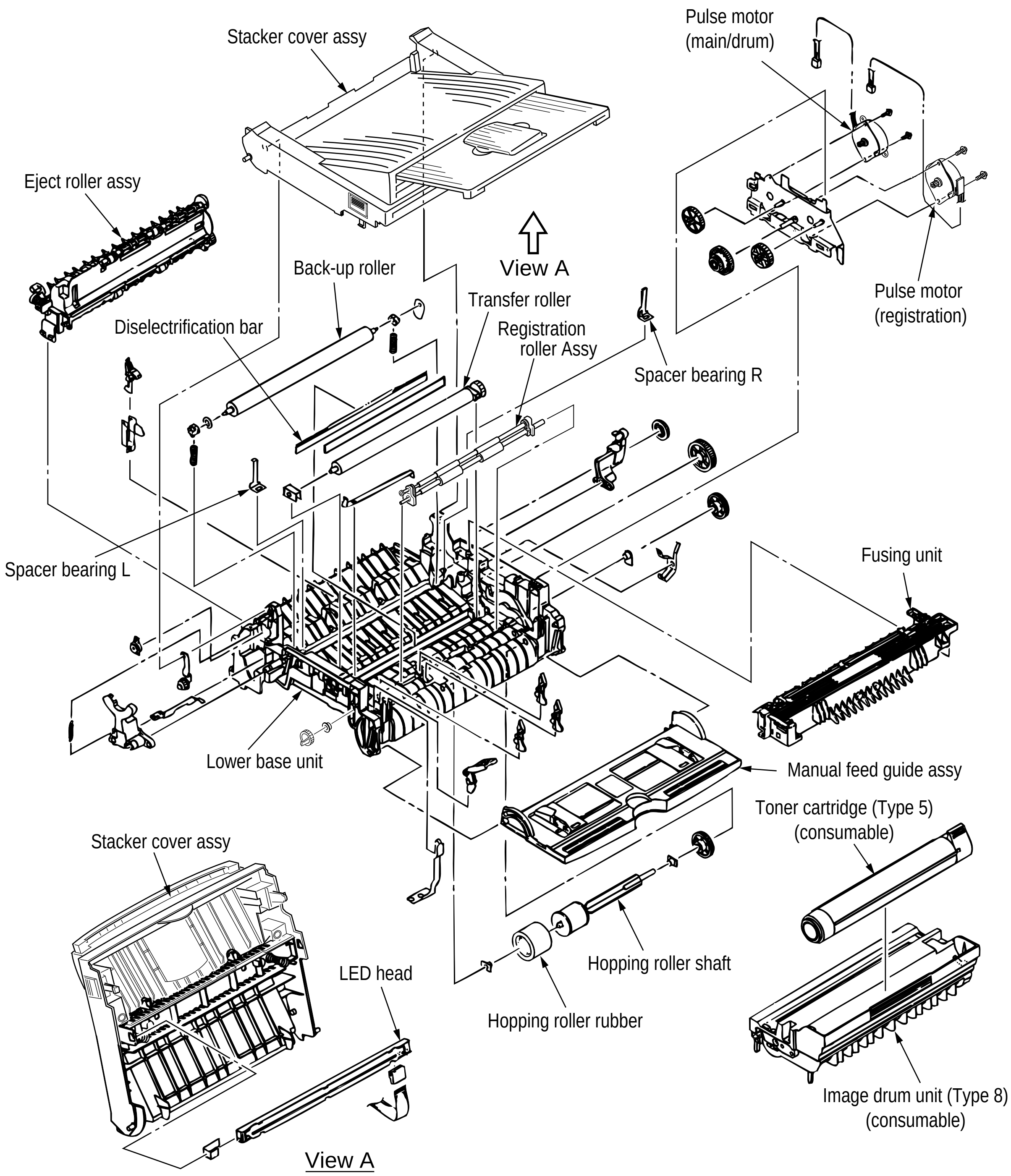


Figure 3-1

[Upper cover unit]

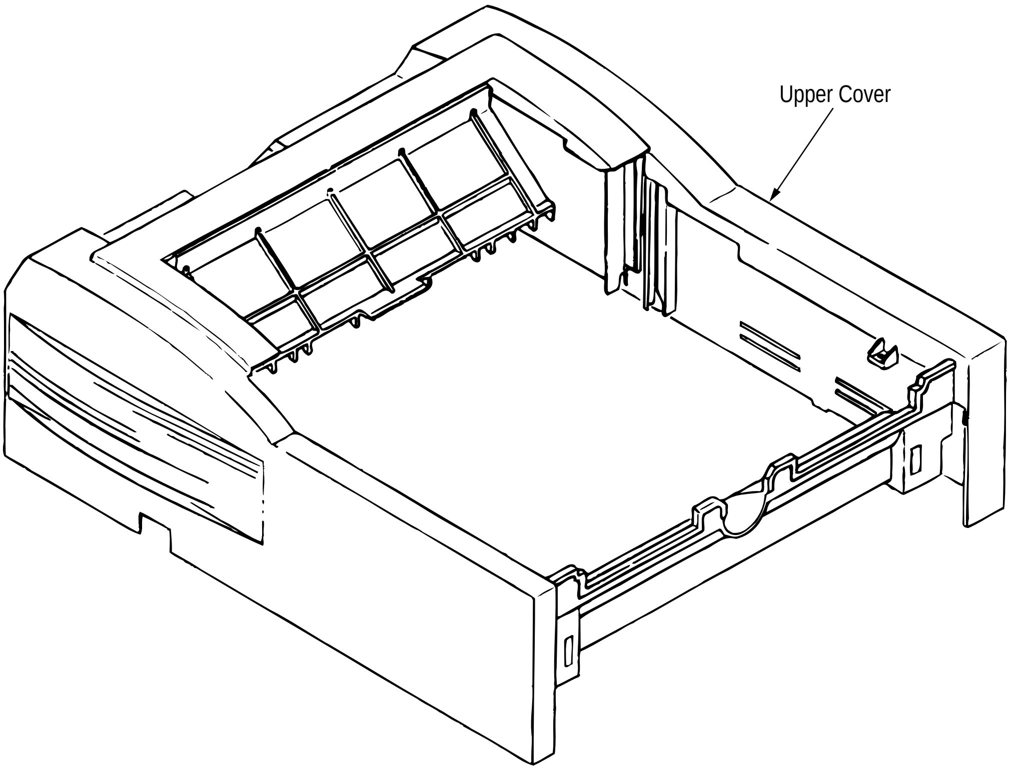


Figure 3-2

[Base unit]

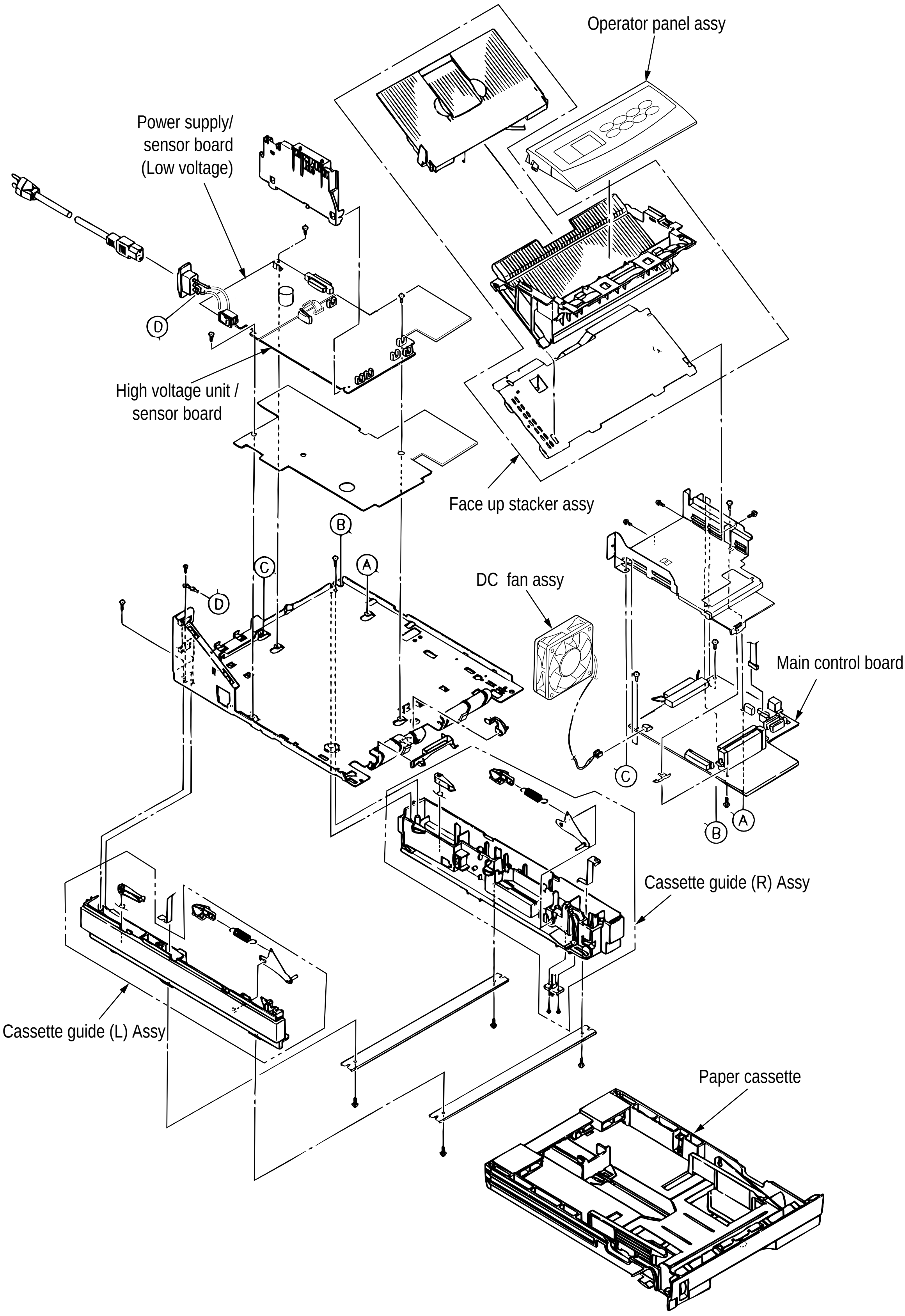
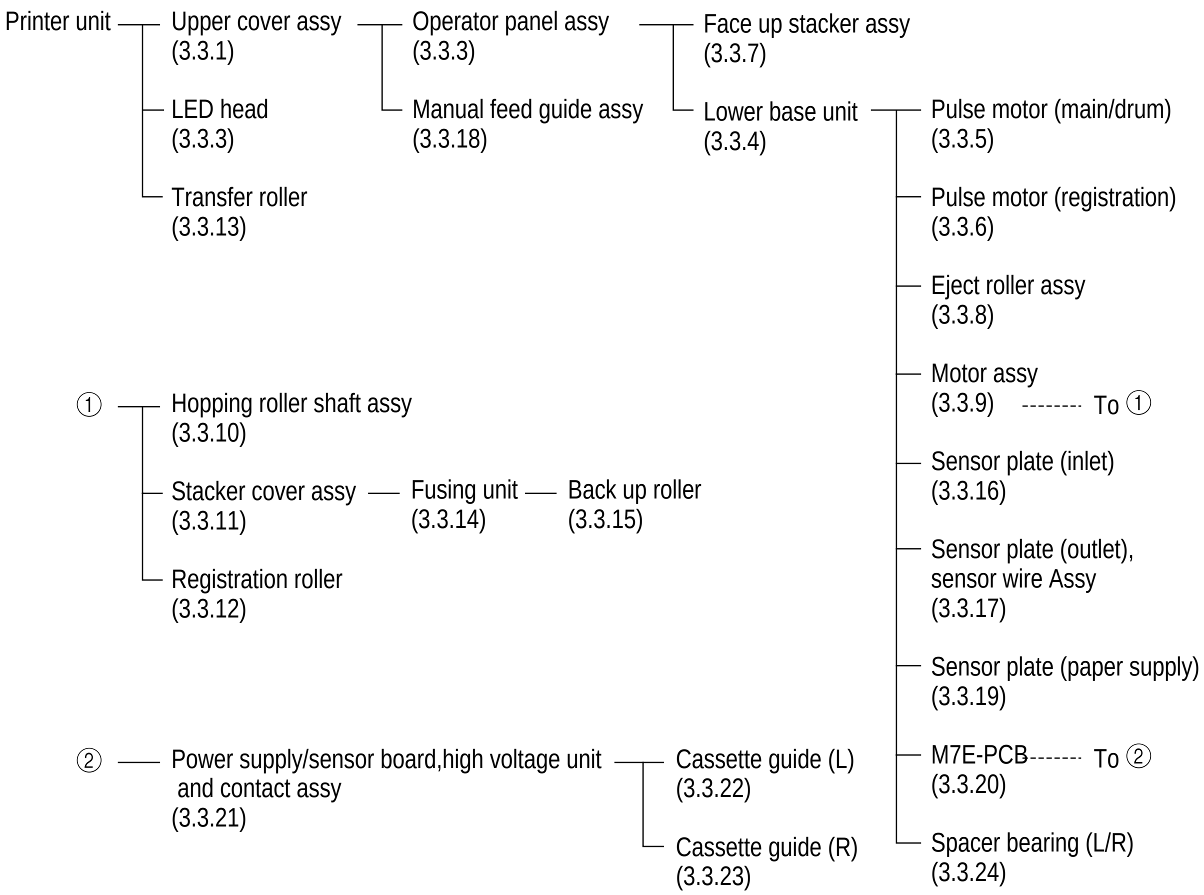


Figure 3-3

3.3 How to Change Parts

This section explains how to change parts and assemblies listed in the disassembly diagram below.

In the parts replacement procedure, those parts marked with the part number inside ● with white letters are RSPL parts.



3.3.1 Upper Cover Assy

(1) With the power switch turned off, unplug the AC power cord from the outlet.

(2) Disconnect the interface cable ①.

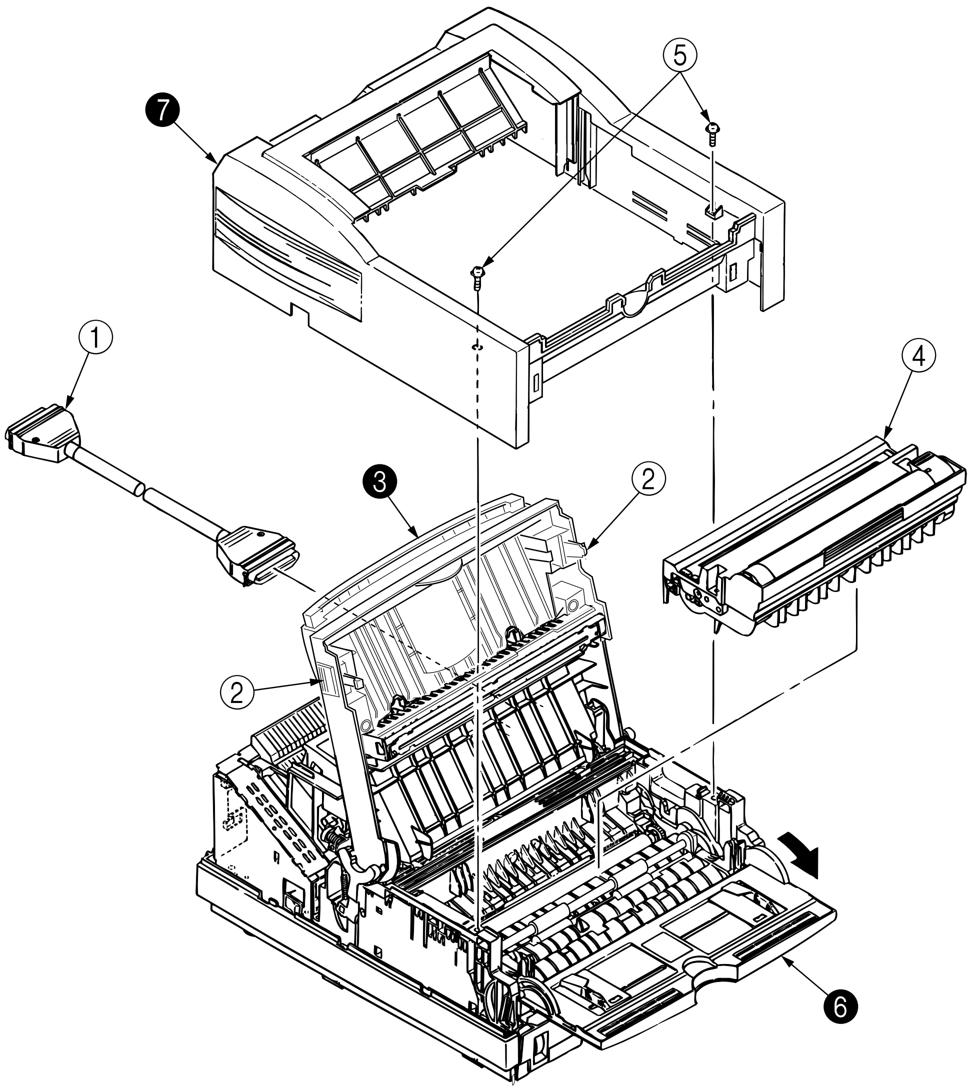
(3) Press the knobs ② on left and right sides and open the stacker cover assy ❸.

(4) Take out the image drum unit ④.

(5) Remove two screws ⑤, and open the manual feed guide assy ❻. Lift the front side of the upper cover ❼ up and unlock the latches at two locations on the back side. Lift and remove the upper cover assy ❼.

Note : 1. When removing or reinstalling the upper cover, be careful not to get the motor cables tangled or caught.

2. When reinstalling the screws ⑤, be sure to direct the screws into preexisting threads.



3.3.2 LED Head

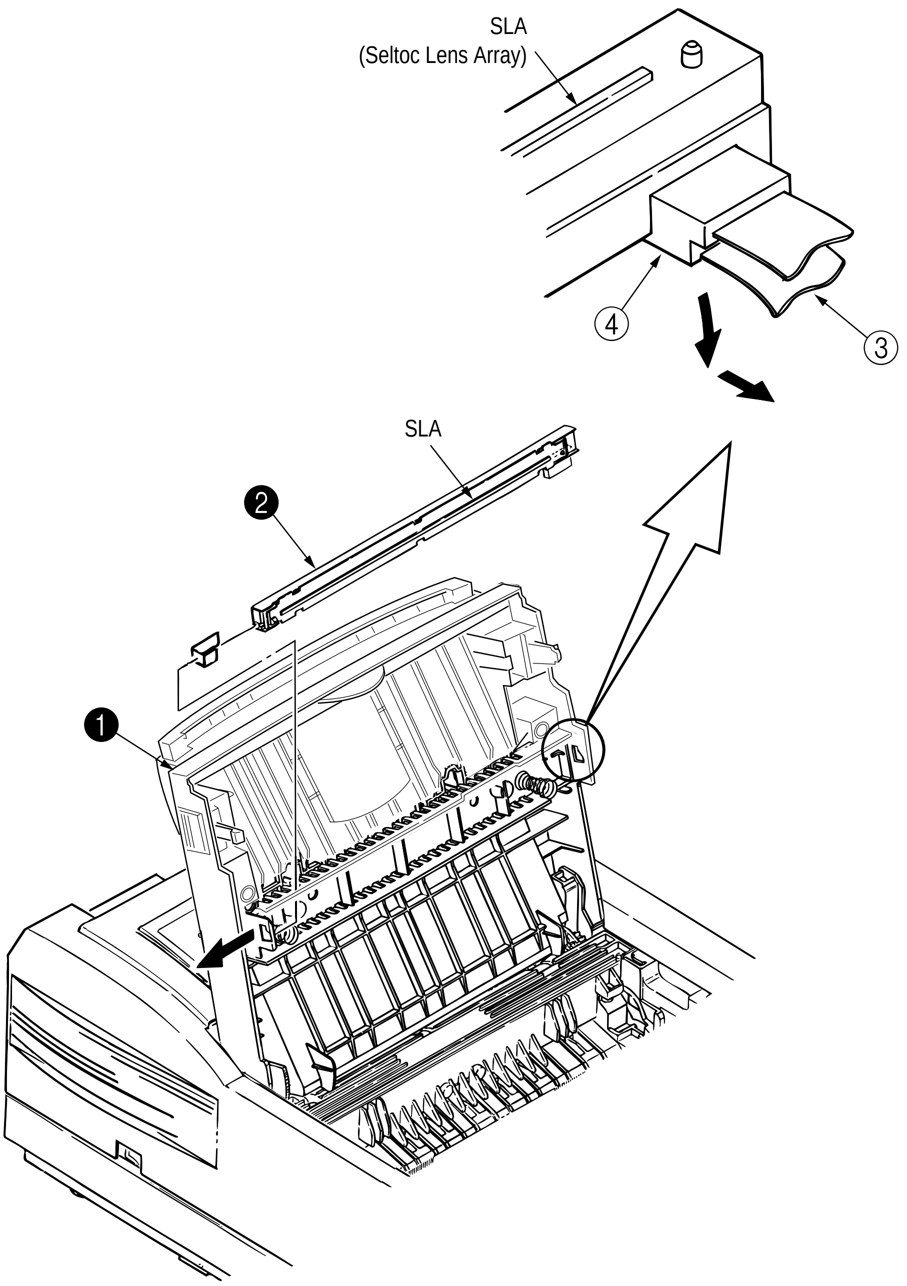
(1) Press the knobs on left and right sides and open the stacker cover assy ❶.

(2) Open the hook section on the left side of the stacker cover and remove the LED head ❷.

Note: • Be sure not to touch directly or push on the SLA part of the LED head.

• Do not remove the LED cable ③ from the connector.

• Remove connector ④ and cable ③ together as an assembly from the LED head.

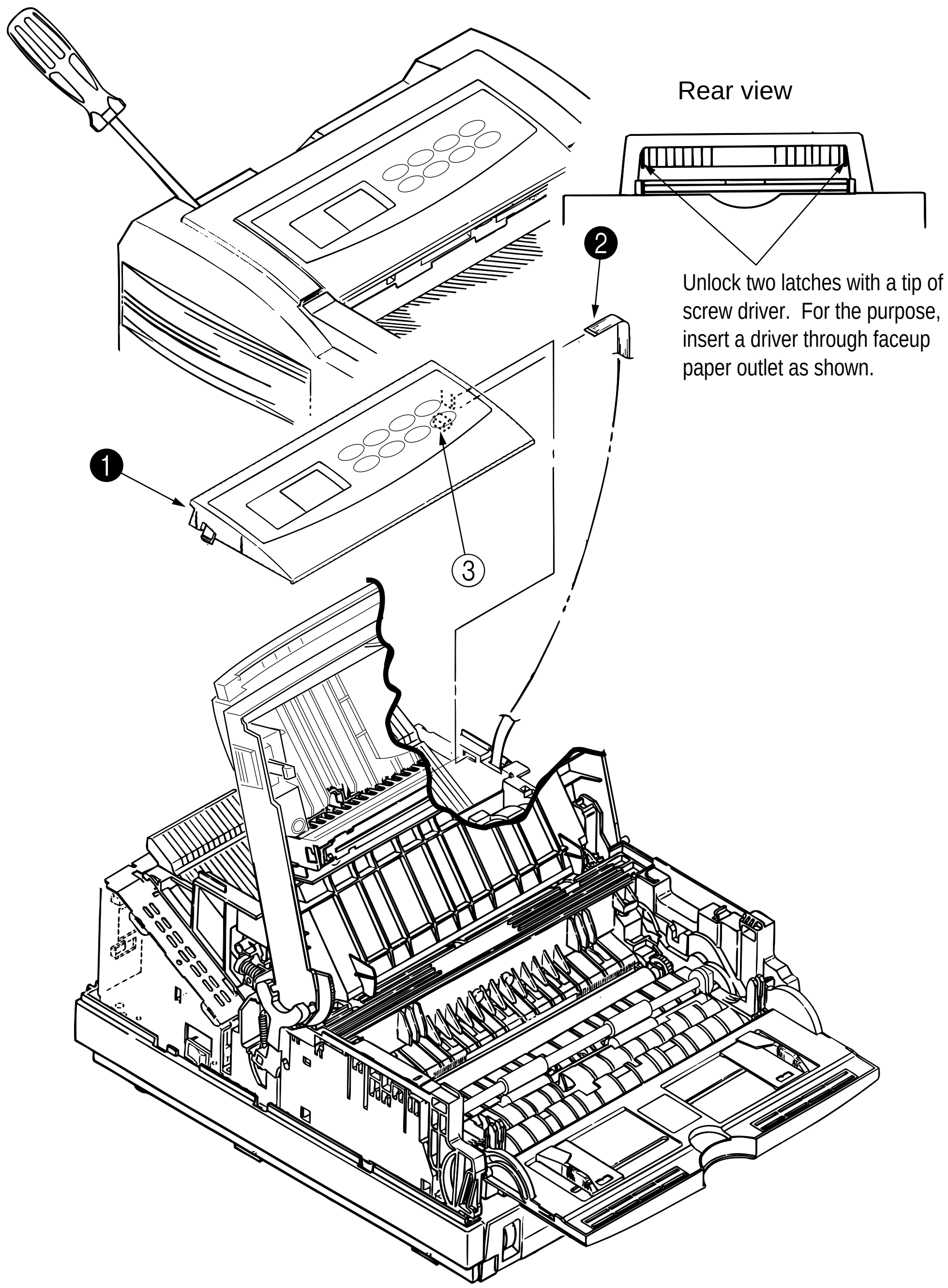


3.3.3 Operator Panel Assy

(1) Unlock two latches on the upper cover from the rear side, lift the operator panel assy ❶ from the back and remove it.

(2) Remove the Sumi card (operator panel) ❷ from the connector (CN1) ③.

Note : You can remove the operator panel assy while the upper cover installed on the unit. However, it is much easier to remove the panel assy after removal of upper cover.



3.3.4 Lower Base Unit

(1) Remove the upper cover assy (see 3.3.1).

(2) Remove the operator panel assy (see 3.3.3).

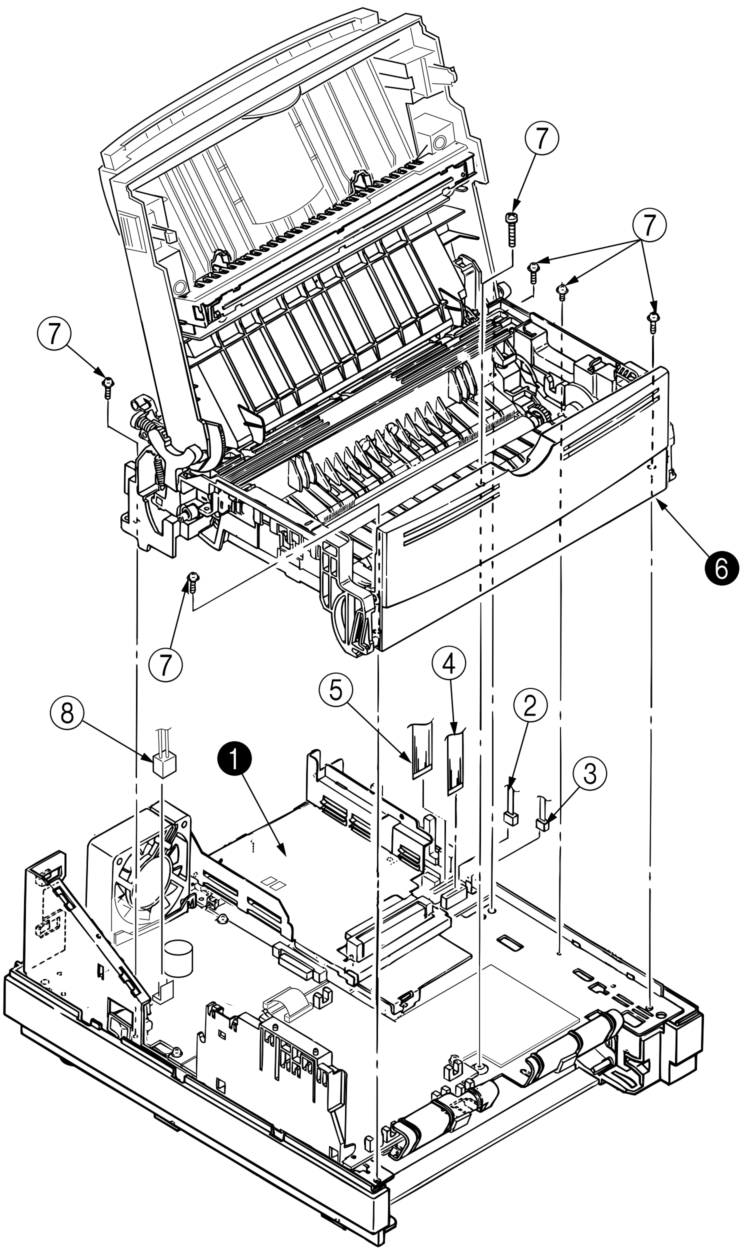
(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the connecting cables ② and ③ of the pulse motors from the connectors (DM, RM) of the M7E-PCB ❶.

(5) Remove the LED head cables ④ and ⑤ from the connectors (HEAD1, HEAD2).

(6) Remove the connecting cable ⑧ of the heater from the connector (CN2).

(7) Open the manual feed guide assy, remove six screws ⑦, then remove the lower base unit ❻.

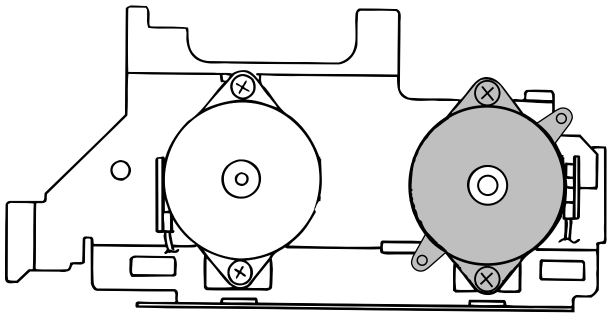


3.3.5 Pulse Motor (Main/Drum)

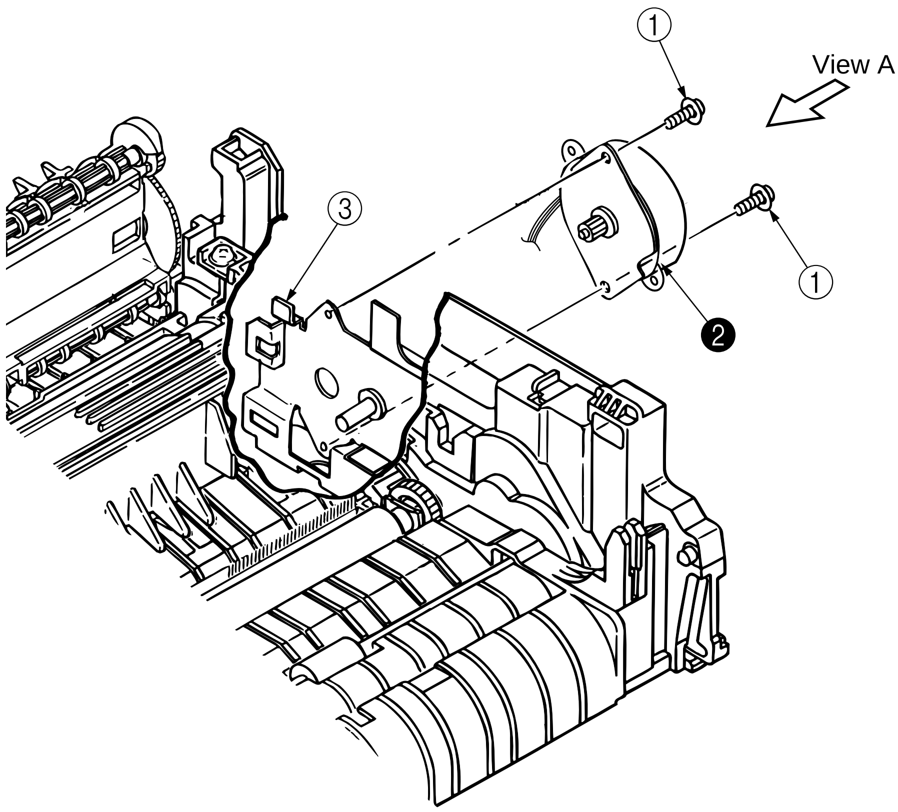
(1) Remove the upper cover assy (see 3.3.1).

(2) Remove the lower base unit (see 3.3.4).

(3) Remove two screws ① and remove the pulse motor (main/drum) ❷ from the motor bracket ③.



View A

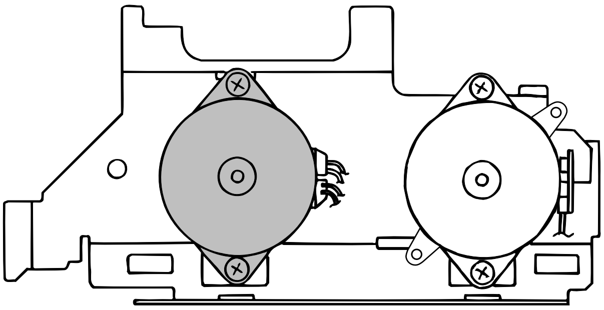


3.3.6 Pulse Motor (Registration)

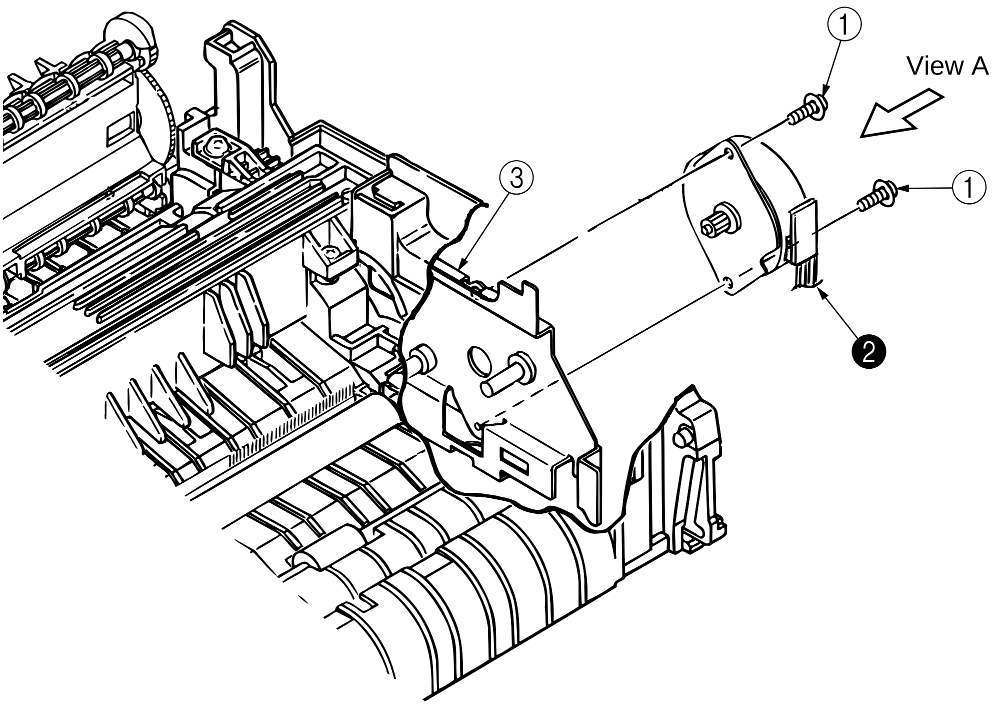
(1) Remove the upper cover assy (see 3.3.1).

(2) Remove the lower base unit (see 3.3.4).

(3) Remove two screws ① and remove the pluse motor (registration) ❷ from the motor bracket ③.



View A



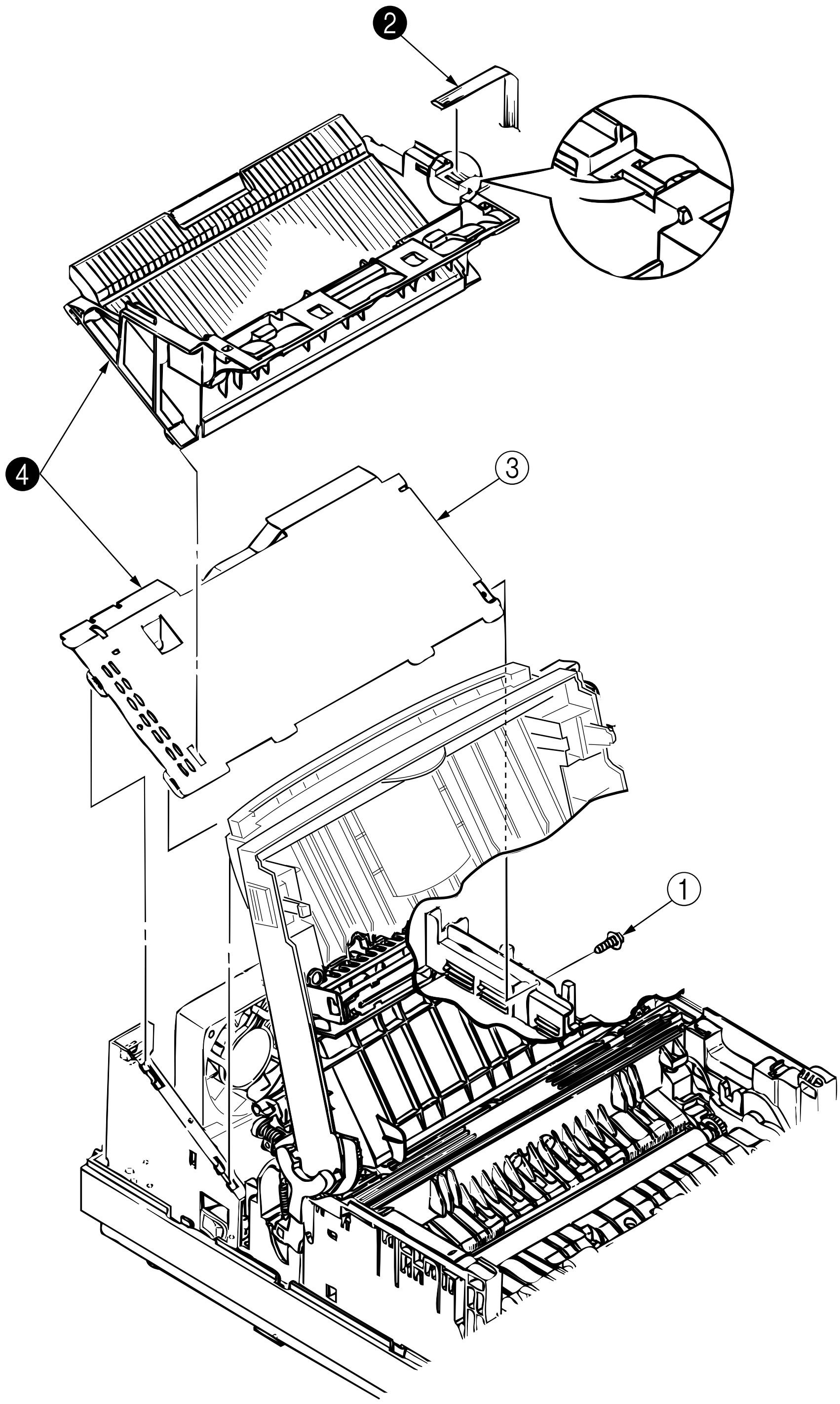
3.3.7 Face Up Stacker Assy

(1) Remove the upper cover assy (see 3.3.1).

(2) Remove the operator panel assy (see 3.3.3).

(3) Remove the screw ① and remove the Sumi card (operator panel cable) ❷ off the latch section of face up stacker Assy ❹. Remove both the shield plate ③ and face up stacker together.

(4) Unlock the latches at two locations, and remove the face up stacker.



3.3.8 Eject Roller Assy

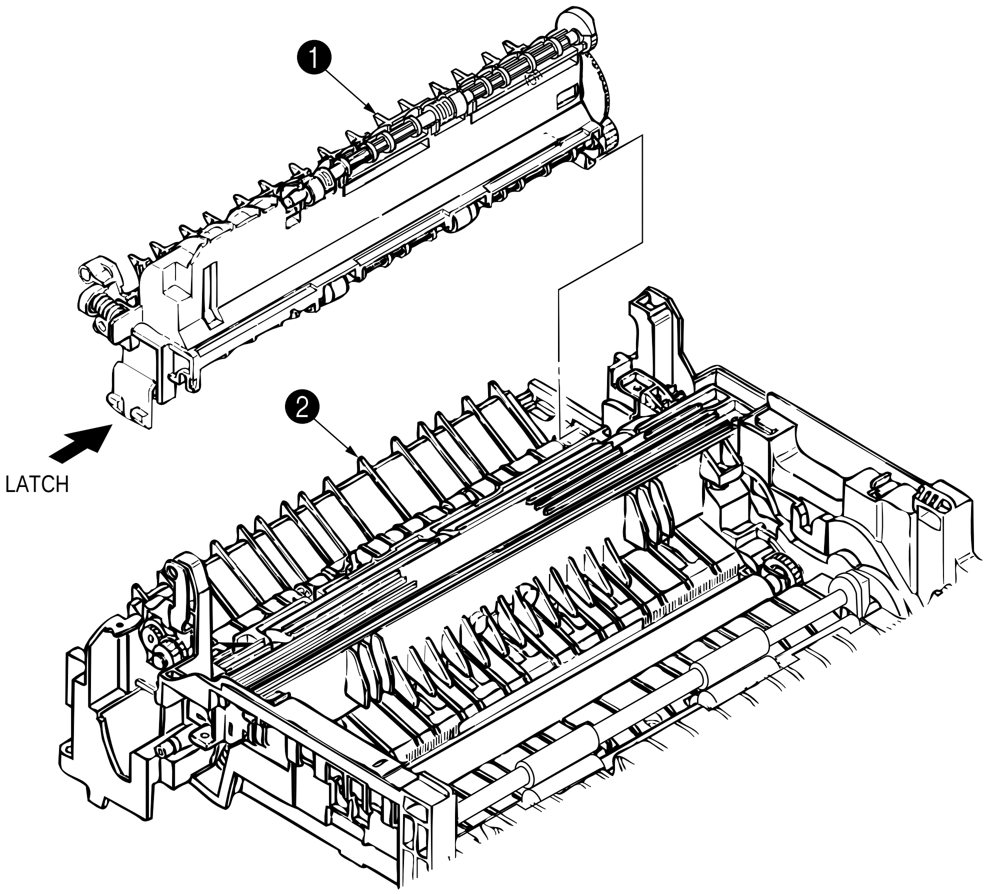
(1) Remove the upper cover assy (see 3.3.1).

(2) Remove the operator panel assy (see 3.3.3).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.4).

(5) Disengage the eject roller assy ❶ from the lower base ❷ by pressing the latch section of the eject roller assy ❶ in the direction of the arrow shown below, and remove the eject roller assy ❶.



3.3.9 Motor Assy

(1) Remove the upper cover assy (see 3.3.1).

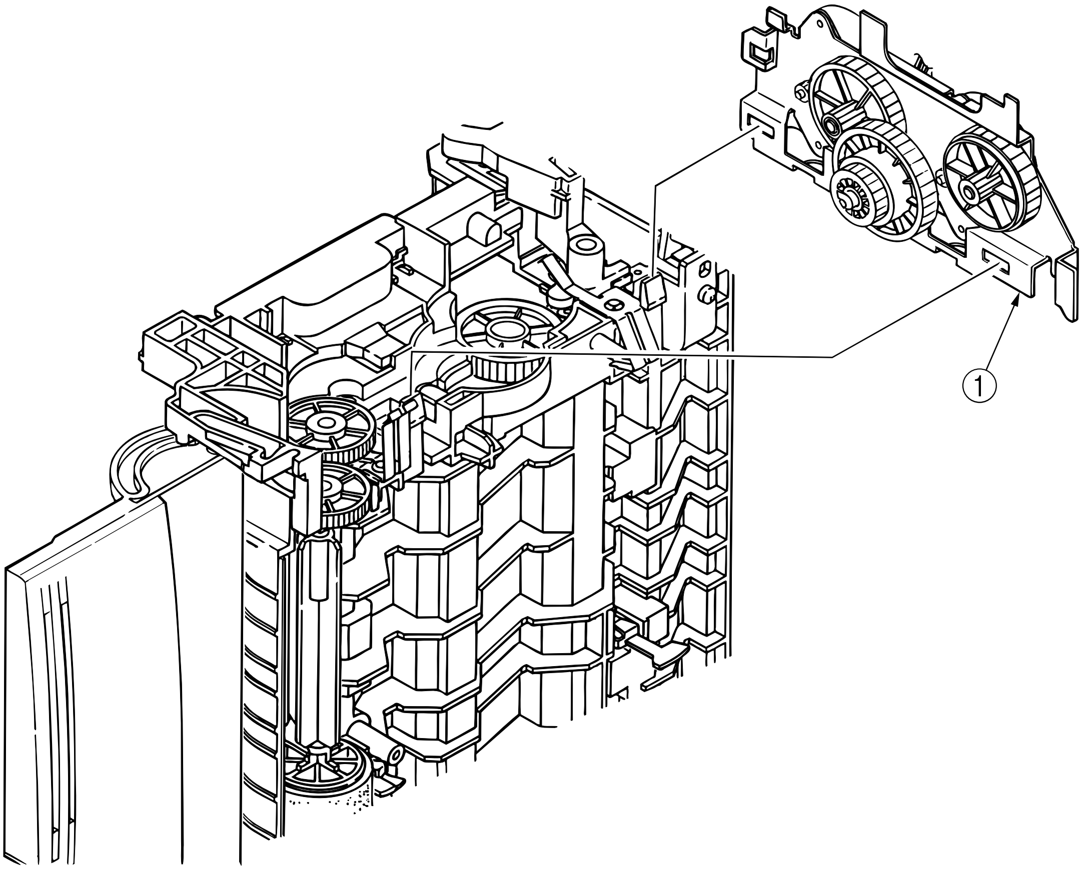
(2) Remove the operator panel assy (see 3.3.3).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.4).

(5) Remove the heat sink from the pulse motor (main/drum) (see 3.3.5).

(6) Stand the lower base unit on its side as shown, and unlock two latches, then remove the motor assy ①.



3.3.10 Hopping Roller Shaft Assy

(1) Remove the upper cover (see 3.3.1).

(2) Remove the operator panel assy (see 3.3.3).

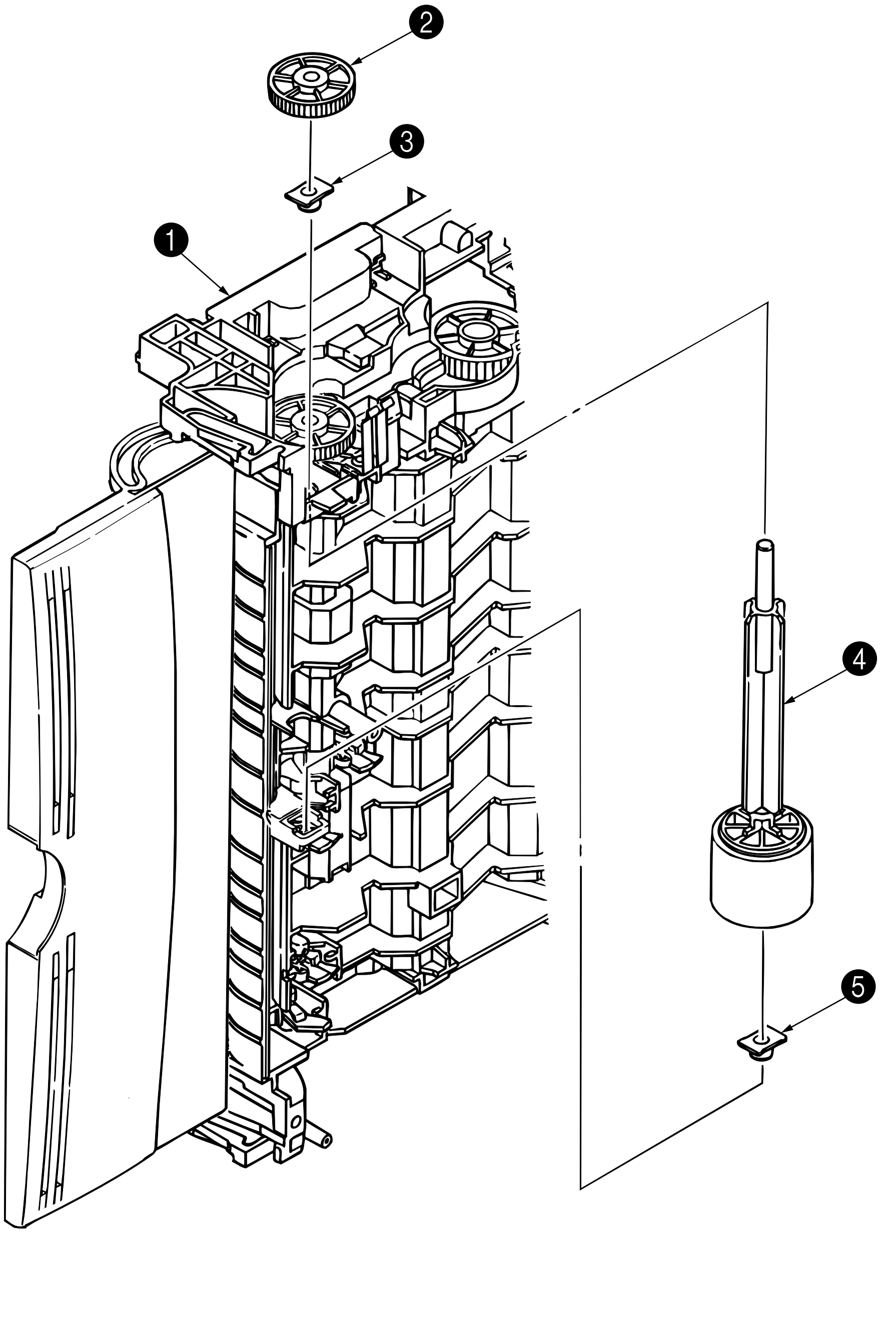
(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.4).

(5) Remove the motor assy (see 3.3.9).

(6) With the lower base unit ❶ standing on its side, remove the one-way clutch gear ❷ and the bearing (A) ❸.

(7) Remove the hopping roller shaft assy ❹ (the bearing (B) ❺ comes off, so be careful not to lose it).



3.3.11 Stacker Cover Assy

(1) Remove the upper cover assy (see 3.3.1).

(2) Remove the operator panel assy (see 3.3.3).

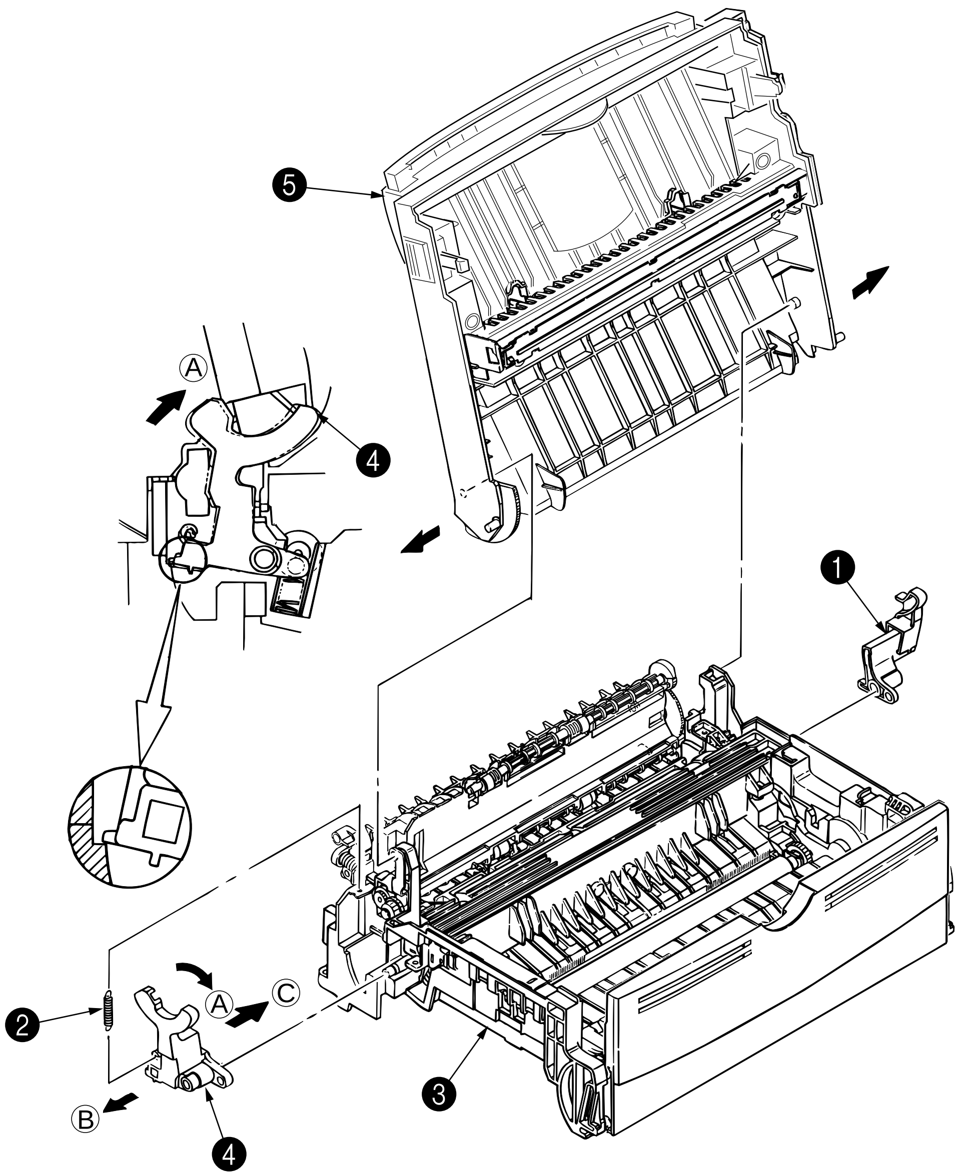
(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the reset lever R ❶.

(5) Detach the reset spring ❷ from the lower base unit ❸, turn the reset lever L ❹ in the direction of arrow Ⓐ until it stops, and remove it in the direction of arrow Ⓑ.

(6) Unlock two latches of the lower base unit ❸, then remove the stacker cover assy ❺.

Note : When reinstalling the reset lever L ❹, fit it onto the guide of the lower base unit ❸, turn it in the direction of arrow Ⓒ while pressing down the shaft of back up roller, and engage the reset lever L ❹.



3.3.12 Registration Roller

(1) Remove the upper cover (see 3.3.1).

(2) Remove the operator panel assy (see 3.3.3).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.4).

(5) Remove the motor assy (see 3.3.9).

(6) With the lower base unit standing on its side, remove the one-way clutch gear ❶ and the bearing ❾.

(7) Remove the Registration Gear by unlocing latch of the Gear ❹ .

(8) Remove the Registration Bearing(L) ❸ .

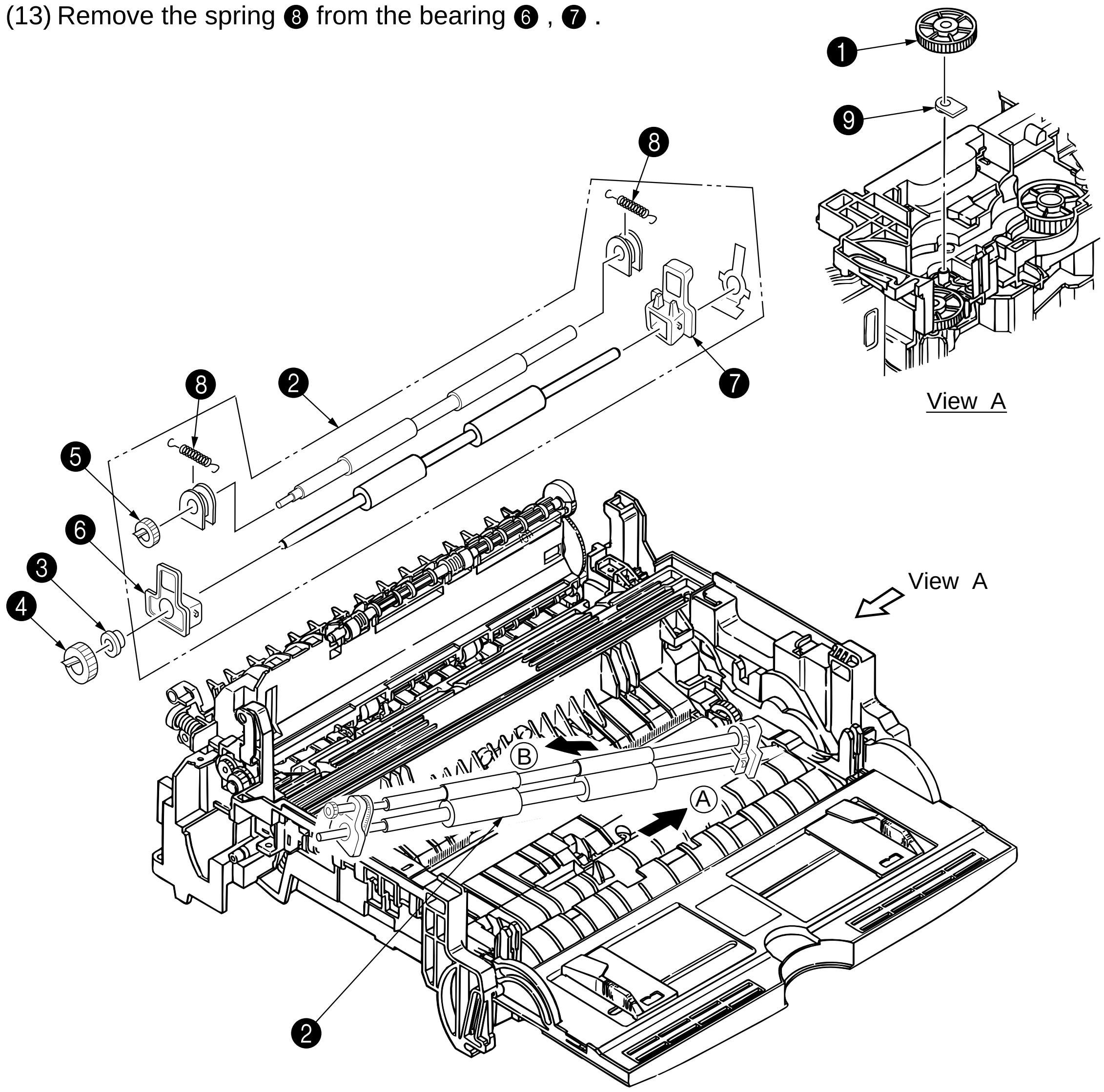
(9) Press the registration roller Assy ❷ in the direction of arrow Ⓐ and lift up the left side of it, then remove the registration roller Assy ❷ .

(10) Pull out the registration roller Assy ❷ in the direction of arrow Ⓑ.

(11) Remove the pressure roller gear ❺ by unlockin the lach of the gear ❺ .

(12) Remove the bearing-Registration L 6 and besring-Registration R 7.

(13) Remove the spring ❽ from the bearing ❻ , ❼ .



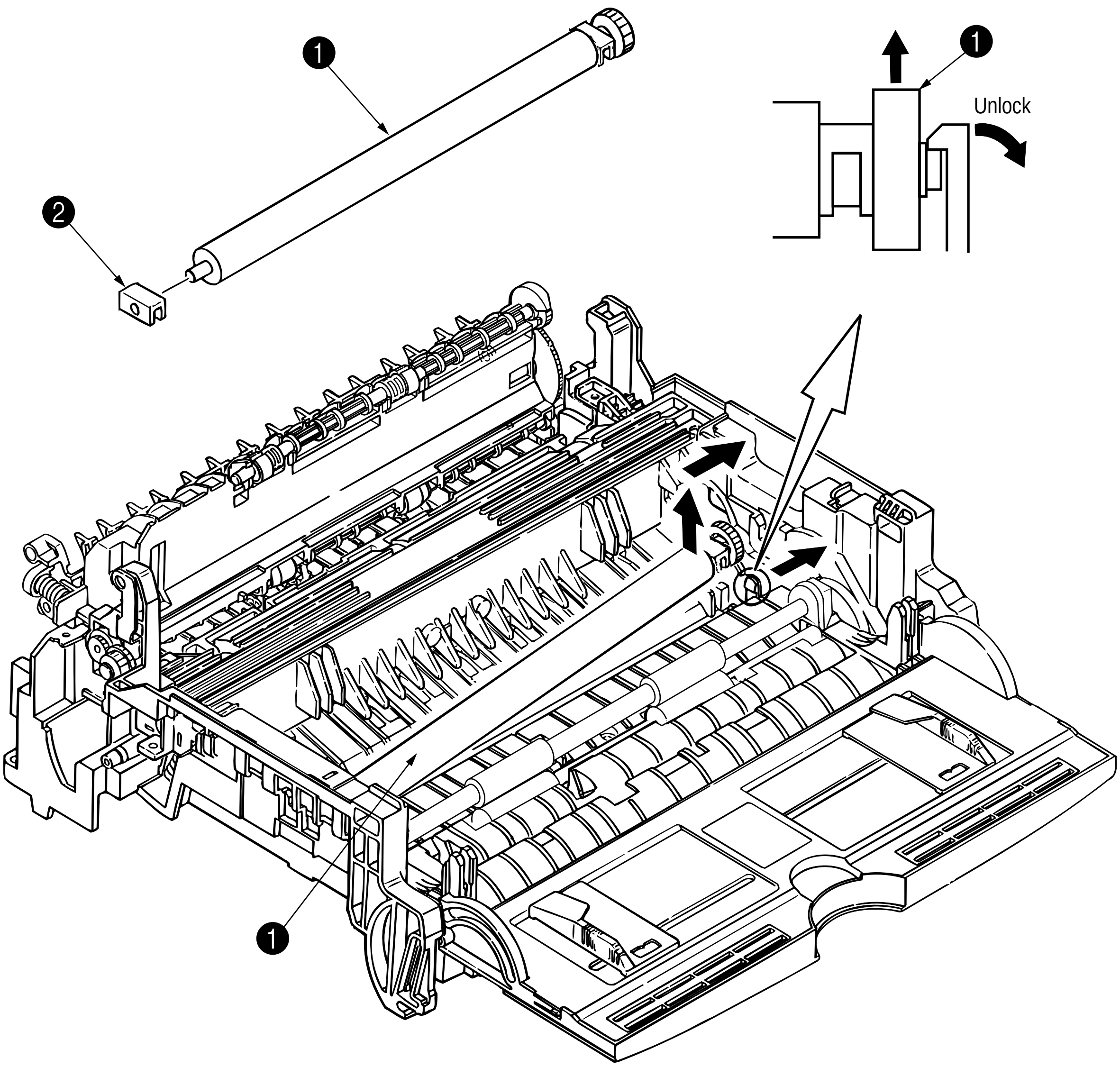
3.3.13 Roller Transfer Assy

(1) With the power switch turned off, unplug the AC cord from the outlet.

(2) Open the stacker cover.

(3) Release the roller transfer assy ❶ by unlocking the latch of the main unit (never apply excessive force when unlocking the latch).

(4) Lift the right side of the roller transfer assy ❶, and shift it to the right side, then pull it out from the main unit (at this time, the bearings ❷ of the left and right sides of the roller transfer assy ❶ will also come off).



3.3.14 Fusing Unit

(1) Remove the upper cover (see 3.3.1).

(2) Remove the operator panel assy (see 3.3.3).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.4).

(5) Remove the stacker cover assy (see 3.3.11).

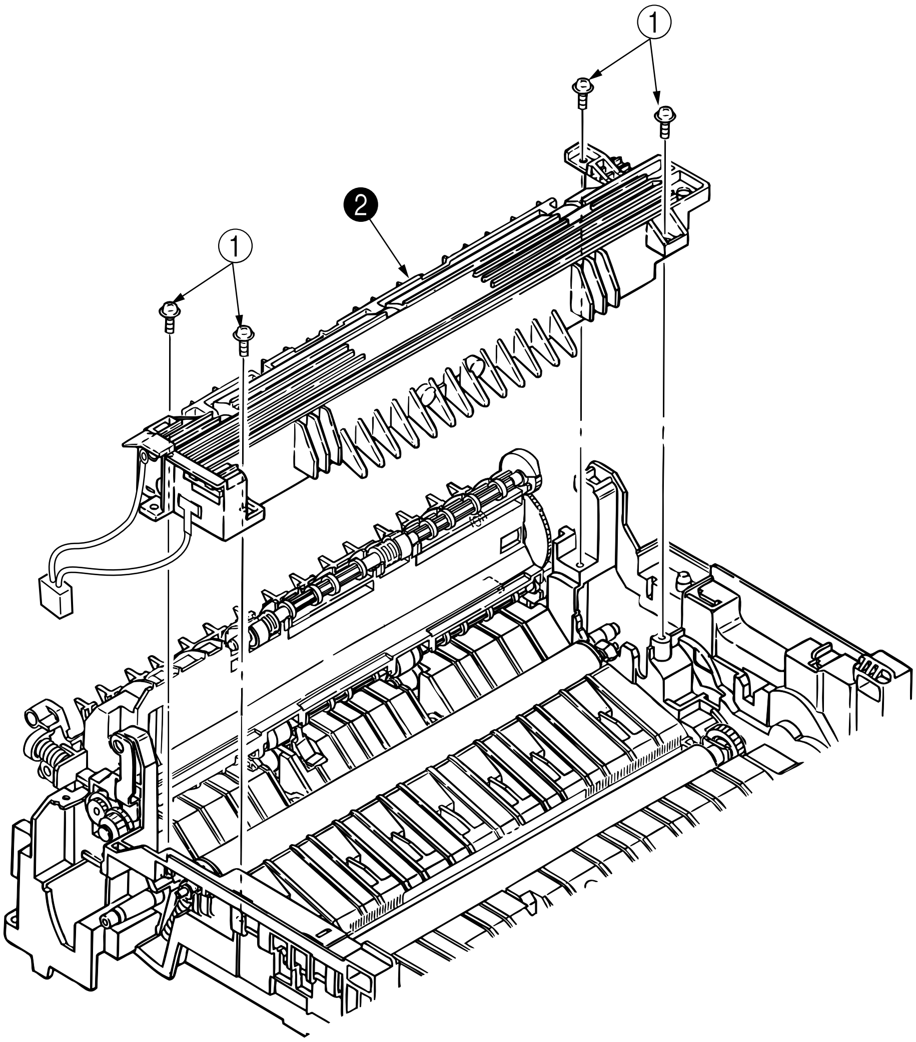
(6) Remove four screws ①, lift and remove the fusing unit ❷.

Caution: Fusing unit may be hot. Use care when handling.

Note : ***1.*** When reinstalling or removing the fusing unit, tighten or loosen the screws while holding the fusing unit assy ❷ down with your hand (it is being pushed up by back up roller).

2. When reinstalling the screws ①, be sure to direct the screws into preexisting thread and avoid damaging the threads.

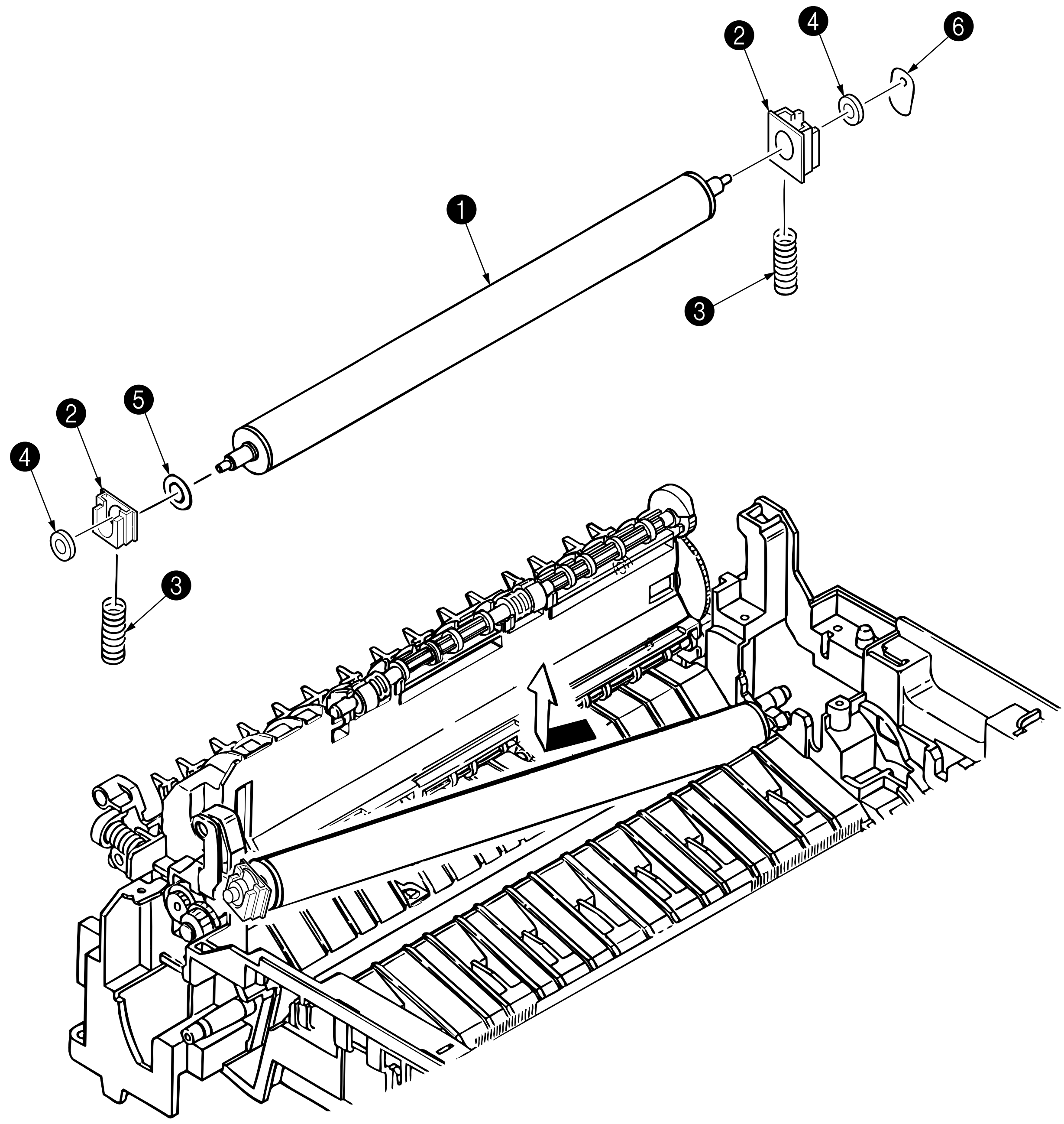
3. Do not apply excessive torque when tightening the screws ①.



3.3.15 Back-up Roller

(1) Remove the fusing unit assy (see 3.3.14).

(2) Lift the left side of the back-up roller ❶, and pull it out to the left side (at this time, two bearing holders (back-up) ❷ and the bias springs (back-up) ❸ and the two ball-bearing ❹, washer B ❺, washer C ❻ will also come off).



3.3.16 Sensor Plate (Inlet)

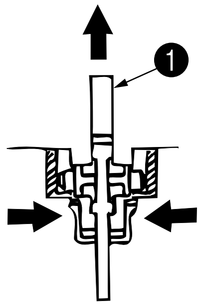
(1) Remove the upper cover (see 3.3.1).

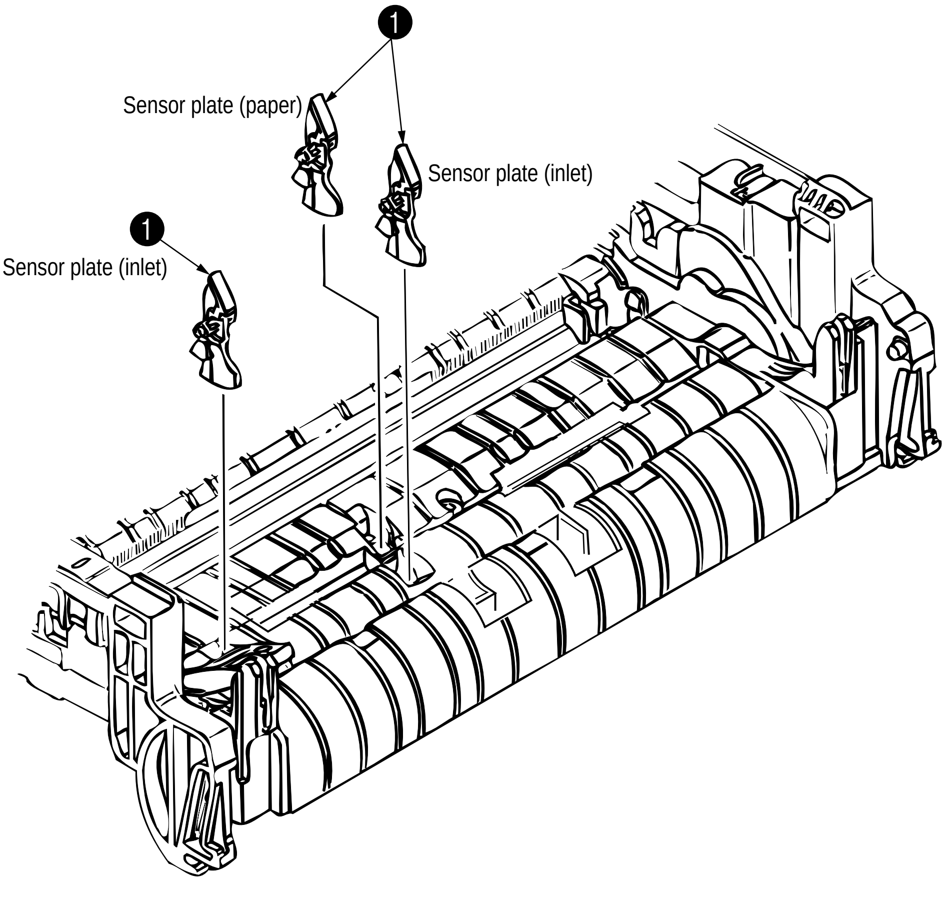
(2) Remove the operator panel assy (see 3.3.3).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.4).

(5) Press the clamps of three sensor plates (inlet and paper) ❶, and remove them by pressing them upward from the bottom.





3.3.17 Sensor Plate (Outlet), Sensor Wire Assy

(1) Remove the upper cover assy (see 3.3.1).

(2) Remove the operator panel assy (see 3.3.3).

(3) Remove the eject roller assy (see 3.3.8).

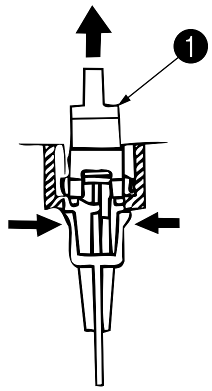
(4) Remove the face up stacker assy (see 3.3.7).

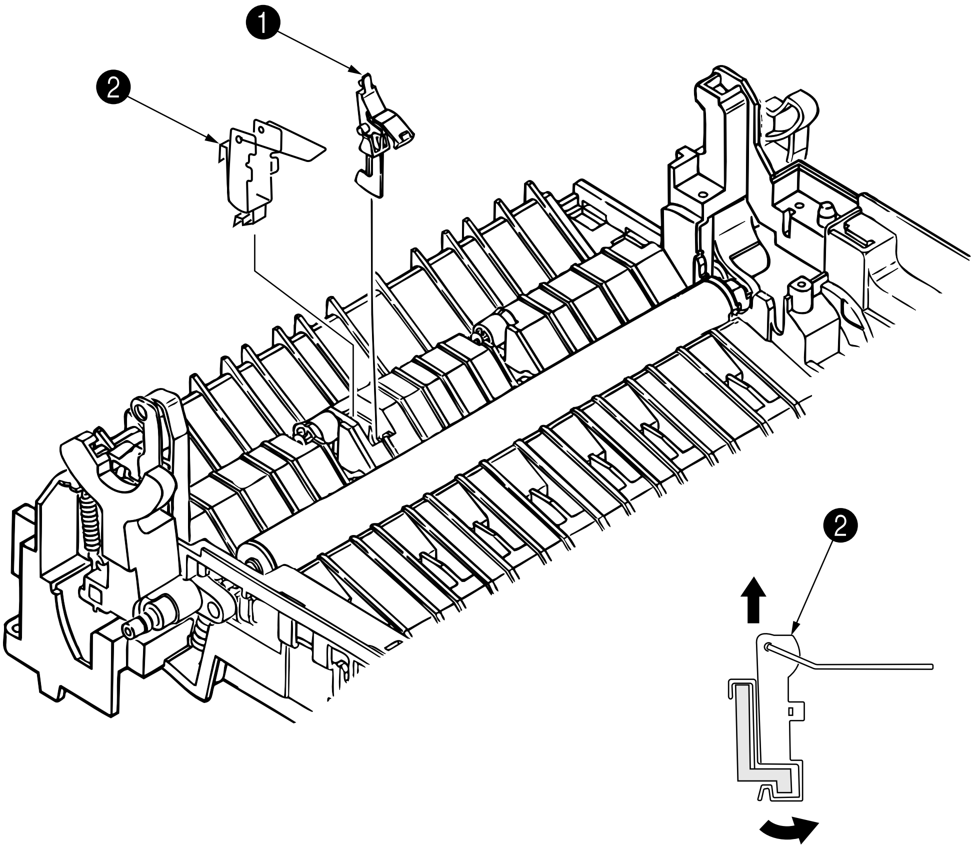
(5) Remove the lower base unit (see 3.3.4).

(6) Remove the fusing unit assy (see 3.3.14).

(7) Press the clamps of the sensor plate (outlet) ❶, and remove the sensor plate by pushing it up.

(8) Turn the clamps of the sensor wire assy ❷ remove the sensor wire assy from the lower base unit.



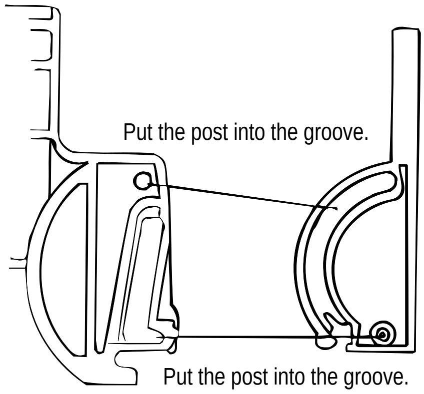


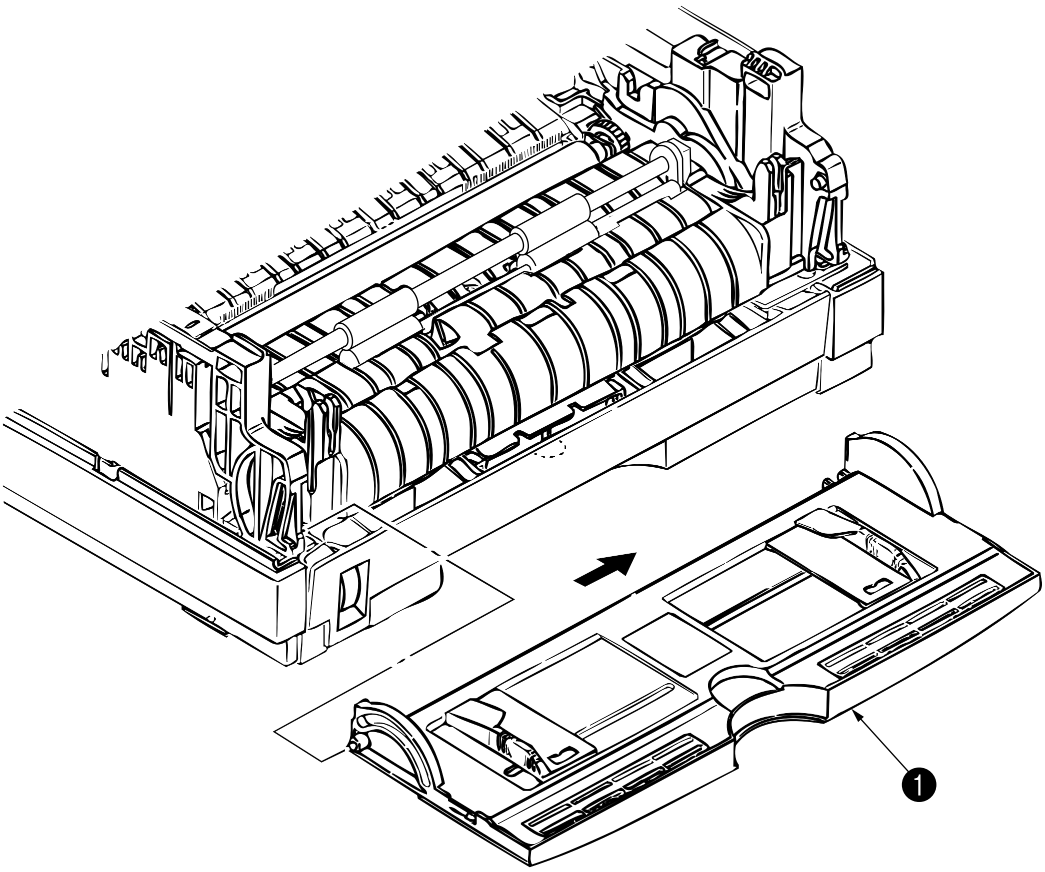
3.3.18 Manual Feed Guide Assy

(1) Remove the upper cover assy (see 3.3.1).

(2) Open the manual feed guide assy ❶, and release the engagement on both sides with the main unit by carefully bending the manual feed guide assy ❶.

Note : When remounting, verify the proper the engagements as shown in the diagram.





3.3.19 Sensor Plate (Paper Supply)

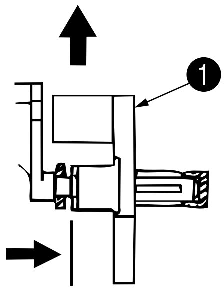
(1) Remove the upper cover assy (see 3.3.1).

(2) Remove the operator panel assy (see 3.3.3).

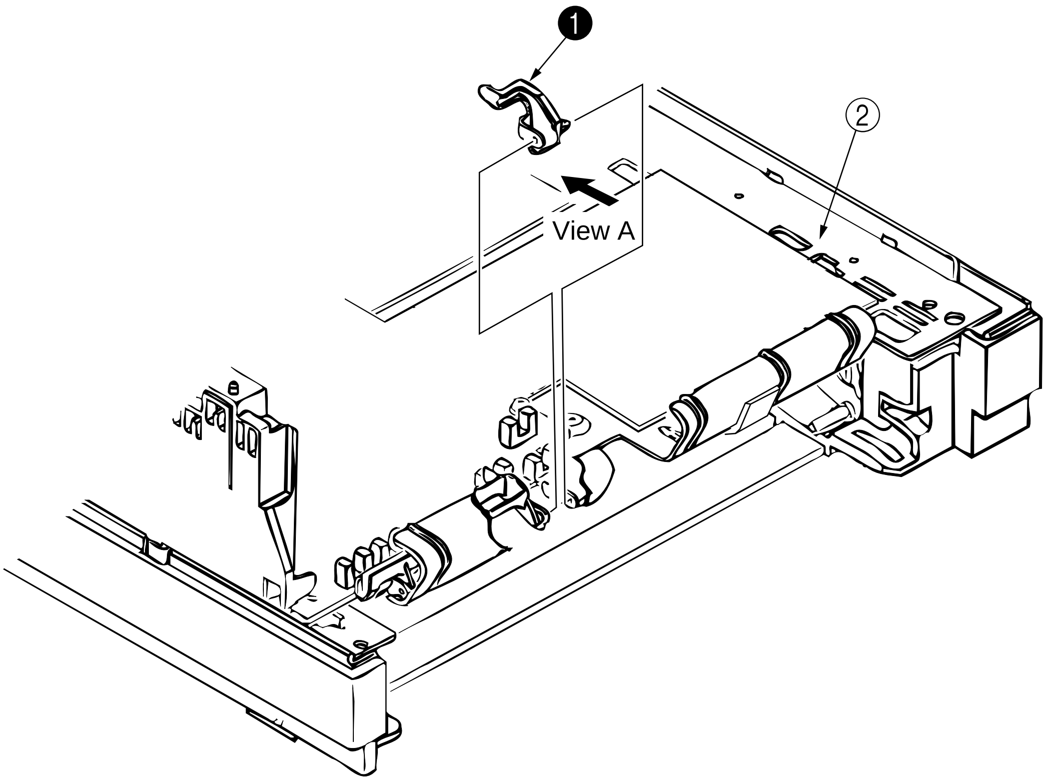
(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.4).

(5) Press the clamps of the sensor plate (paper supply) ❶ to unlock the latch, and remove it from the base plate ②.



View A



3.3.20 M7E-PCB

(1) Remove the upper cover assy (see 3.3.1).

(2) Remove the operator panel assy (see 3.3.3).

(3) Remove the face up stacker assy (see 3.3.7).

(4) Remove the lower base unit (see 3.3.4).

(5) Remove the connector (2NDTRAY) ⑥.

(6) Remove three screws ①.

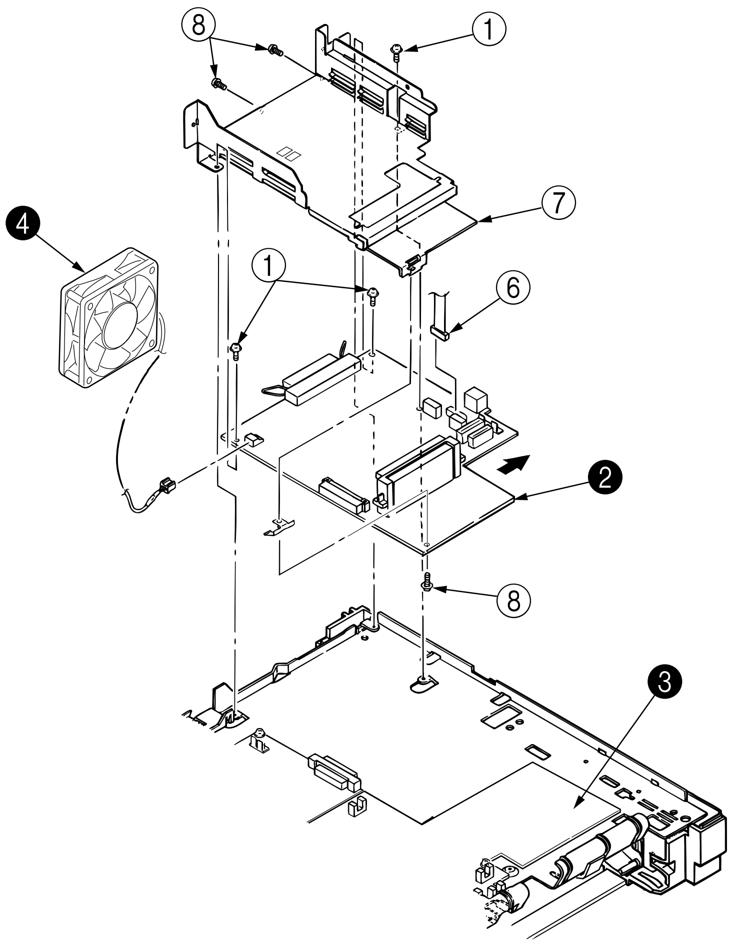
(7) Move the M7E-PCB ❷ in the direction of arrow to disconnect it from the power supply/sensor board ❸.

(8) Remove the connector FAN, and disconnect the fan motor ❹.

(9) Remove the M7E-PCB ❷, together with the PCB guide plate (remove the fan motor ❹ at the same time).

(10) Remove three screws ⑧ and remove the PCB guide plate ⑦ from the M7E-PCB ❷.

Note : When reinstalling the M7E-PCB ❷ onto the guide plate ⑦, be careful not to bend the base plate (it is desirable to place a block underneath it to prevent bending).



3.3.21 Power Supply/Sensor Board, High Voltage Unit and Contact Assy

(1) Remove the upper cover assy (see 3.3.1).

(2) Remove the lower base unit (see 3.3.4).

(3) Remove the M7E-PCB (See 3.3.20).

(4) Remove the AC inlet ① from the base plate ②.

(5) Remove the screw ③ and remove the grounding (earth) wire ④.

(6) Remove the Ferite core ⑨ from the grounding wire.

(7) Remove nine screws ⑤, and remove the power supply/sensor board ❻ and contact assy ❼ together.

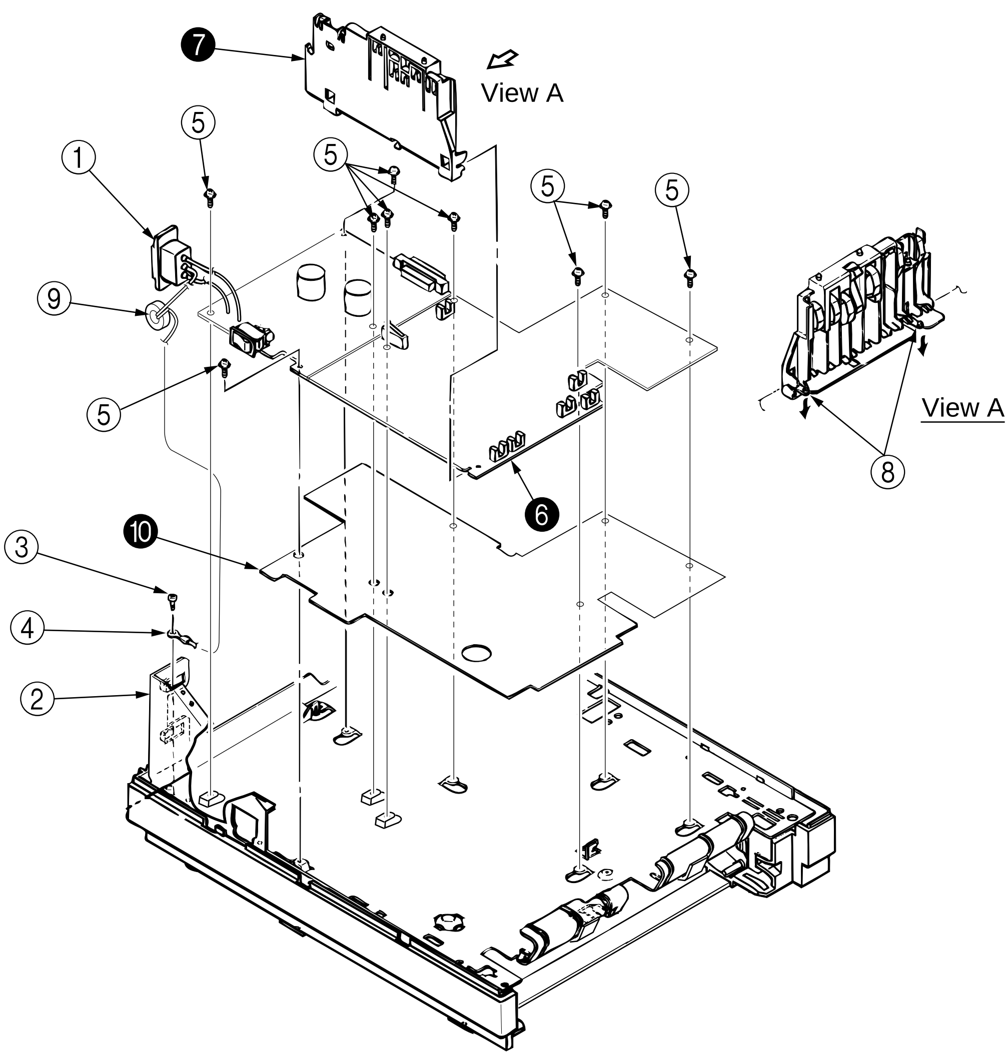
(8) Unlock two latches ⑧, and remove contact assy ❼ from the power supply/sensor board ❻.

(9) Remove the Insulation plate ❿ from the base plate ②.

Note : ***1.*** Be careful about the sensor (paper supply) when reinstalling the lower base.

2. Make sure that no excessive force is applied to the power supply switch.

3. When installing the power supply/sensor onto the base plate, be careful not to bend the base plate (it is desirable to place a block underneath it to prevent bending).



3.3.22 Cassette Guide L Assy

(1) Remove the paper cassette.

(2) Remove the upper cover assy (see 3.3.1).

(3) Remove the lower base unit (see 3.3.4).

(4) Remove the M7E-PCB (see 3.3.20).

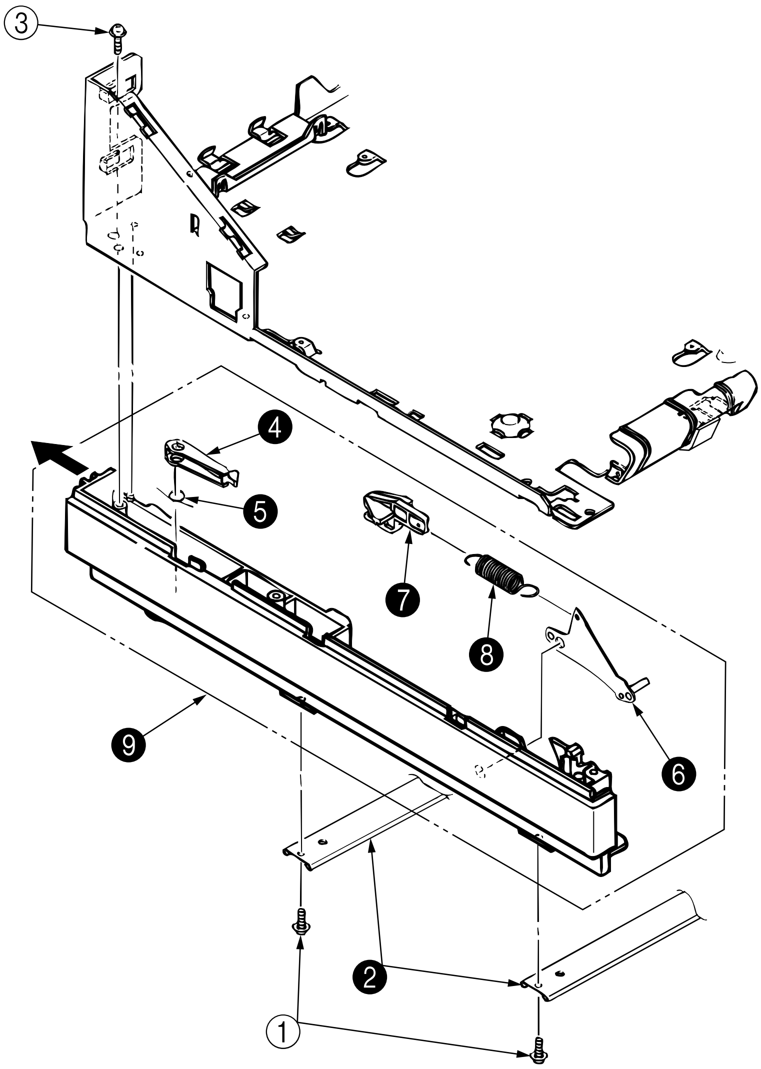
(5) Remove the power supply/sensor board (see 3.3.21).

(6) Remove two screws ①, and remove the guide rails ❷.

(7) Remove the screw ③, and remove the cassette guide L Assy ❾ by shifting it in the direction of the arrow as shown below.

(8) Remove cassette lock lever ❹ and torsion spring ❺.

(9) Remove cassette lock lever spring ❽ then remove the sheet link (L) ❻ and Pull block ❼.



3.3.23 Cassette Guide R Assy

(1) Remove the paper cassette.

(2) Remove the upper cover assy (see 3.3.1).

(3) Remove the lower base unit (see 3.3.4).

(4) Remove the M7E-PCB (see 3.3.20).

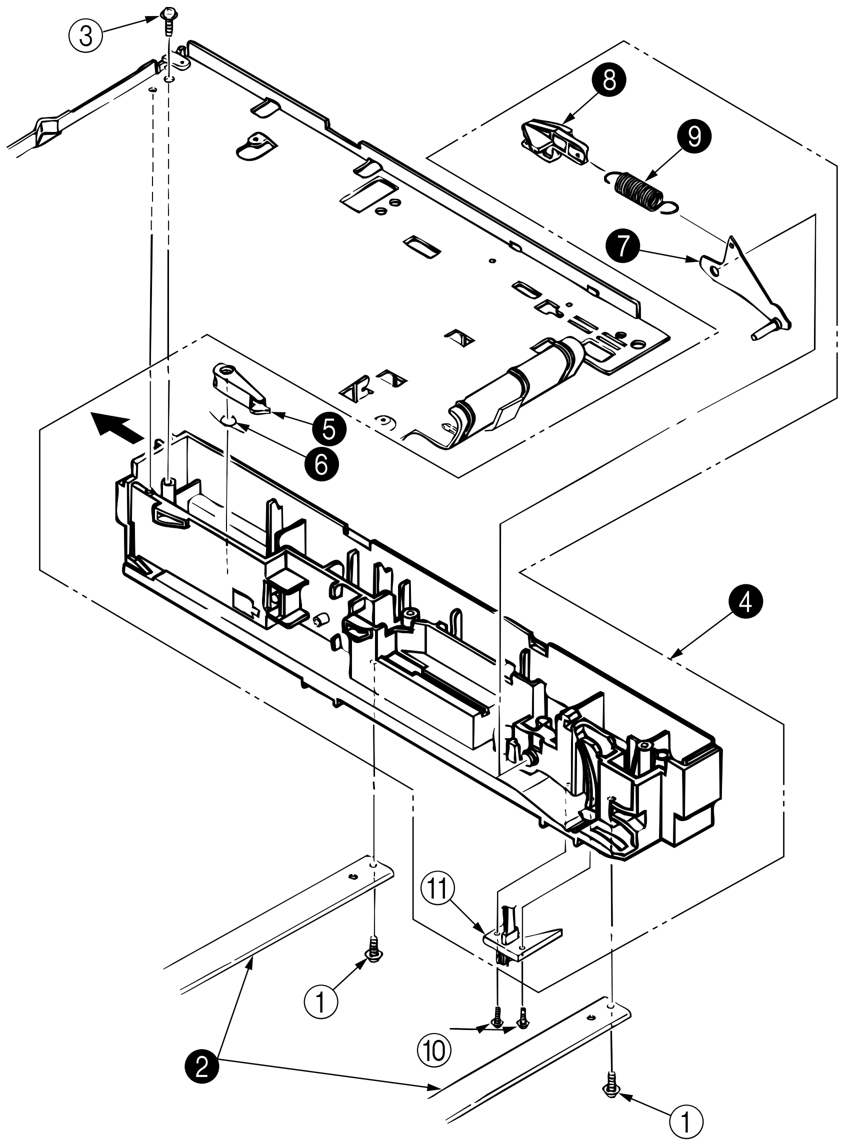
(5) Remove two screws ①, and remove the guide rails ❷.

(6) Remove the screw ③, and remove the cassette guide R Assy ❹ by shifting it in the direction of arrow.

(7) Remove the cassette lock lever ❺ and torsion spring ❻.

(8) Remove the cassette lock lever spring ❾, then remove the sheet link (R) ❼ and link pull block ❽.

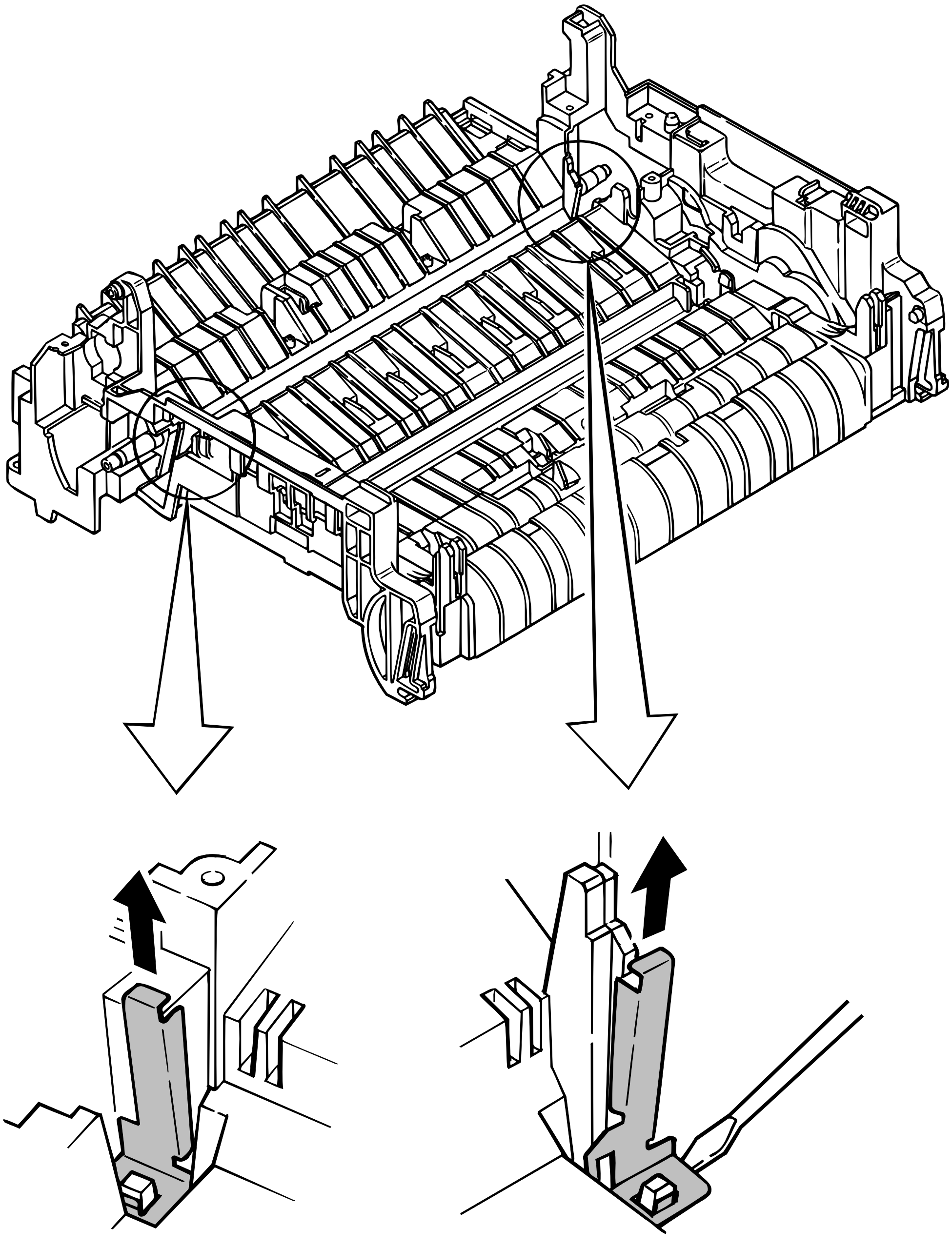
(9) Remove two screws ⑩, and remove the square-shaped connector ⑪.



3.3.24 Spacer Bearing (L/R)

(1) Remove the back-up roller (see 3.3.15).

(2) Remove spacer bearing (L/R) with a tip of screw driver.



Spacer bearing L

Spacer bearing R

4. ADJUSTMENT

This chapter provides explanations concerning the adjustment necessary when replacing a part. The adjustment is made by changing the parameter value set in EEPROM on the main control board. The parameter can be set by the key operation from the operator panel. This printer has three kinds of maintenance modes, and it is necessary to select one of the modes when replacing any parts.

4.1 Maintenance Modes and Functions

4.1.1 User Maintenance Mode

To enter into the user maintenance mode, turn the POWER switch on while holding the MENU key down.

Function

There are thirteen functions as follows:

- Menu reset(See Table 4-1)
- Hex dump
- Drum counter reset
- Recieve buffer
- ECP disable
- Opepane menu disable
- X-adjust
- Y-adjust
- 2nd Tray
- Place page command
- Setting
- Jam Recovery (Print Performance for continuous)
- Power Save disable

Detailed descriptions of these functions are provided in Appendix E, **DIAGNOSTICS TEST.**

4.1.2 System Maintenance Mode

Note: This mode is used only by maintenance personnel and it should not be released to the end-users.

To enter into the system maintenance mode, turn the POWER switch on while holding the *Recover* key down.

Function

There are seven functions as follows:

- Page count display
- Page count printing enable/disable
- Rolling ASCII continues printing
- Loop test
- EEPROM reset (See Table 4-1)
- SIDM enable/ disable
- DRAM Memory Check mode

Detailed descriptions of these functions are provided in Appendix E, **DIAGNOSTICS TEST**.

4.1.3 Engine Maintenance Mode

Note: This mode is used only by maintenance personnel, and it should not be released to the end users.

(1) To enter into the engine maintenance mode, turn the power on while holding ENTER and FORM FEED keys down.

(2) Functions of this mode are selected by the menu.

(3) The way to exit out of this mode varies depending on the settings.

(4) There are following engine maintenance modes:

a) Head drive time setting
Sets the drive time of the LED head.
b) 600 x 1200 DPI strobetime relative value.
c) Installed LED head indentification.
d) Printing start position setting
Sets the starting position of printing.
e) Drum count total display
The total image drum rotation count of the printer, as counted by the engine section, is displayed on the LCD.
f) Drum count display
The total image drum rotation count, as counted by the engine section, is displayed on the LCD.
g) Standard tray paper feeding quantity setting
Sets the amount of paper to be fed from the standard tray.
h) High Capacity Second Paper Feeder paper feeding quantity setting
Sets the amount of paper to be fed from High Capacity Second Paper Feeder.
i) High Capacity Second Paper Feeder downloading table selection
Selects the downloading table of High Capacity Second Paper Feeder.
j) Power Envelope Feeder paper feeding quantity setting
Sets the amount of paper to be fed from Power Envelope Feeder.
k) Power Envelope Feeder downloading table selection
Selects the downloading table of Power Envelope Feeder.
l) Engine Test
m) Engine Reset
All EEPROM areas used by the engine section are reset to factory default values.
(See Table 4-1)
After reset, the printer returns to normal operating mode.

Note: "Printing start position setting" is for shipping. Do not change its default value.

Detailed descriptions of these functions are porvided in Appendix E, **DIAGNOSTICS TEST**.

4.1.4 EEPROM initialization

The corresponding are of the EEPROM is initialized for each event as shown Table 4-1.

Talbe 4-1 EEPROM Initial Setting Range

No	Event (EEPROM area)	Menu level 1	Menu level 2	F/W revision area	Customer information	User maintenance area *Note1)*	System maintenance area *Note1)*	Engine maintenance area *Note1)*	Drum counter	Fuser counter	Page counter
1	User maintenance menu reset	○									
2	System maintenance EE-PROM reset	○	○			○	○				
3	Engine maintenance engine reset							○	○	*Note2)*	*Note2)*
4	Firm revision check error at power-on	○	○	○		○	○				
5	Customer setting	○	○		○	○	○				
6	User information error	○	○		○	○	○				

○: Represents initialization

Note1) Items of each maintenance menu which are subjects here are listed in the following table.
Engine ID check error at power on is set at default for all menu items, thus it will not be mentioned here.

Note2) Only when the page counter is 500 sheets or less, it is reset to 0.

Talbe 4-1 Items of Each Maintenance Menu Targeted for EEPROM Reset

User maintenance menu area	System maintenance menu area	Engine maintenance menu area
Resource save	Whether a page counter printing is added or not to a menu printing	No items subjected to. All except counters are subjected to reset. As a common spec.
Receiving buffer	SIDM emulation switch enable/disable	
Operator panel menu function enable/disable		
X/Y ADJUST		
2ND feed destination designating command		
Left alignment based printing shift		
Cleaning cycle		
Jam recovery Enable/Disable		

4.2 Adjustment When Replacing a Part

Adjustment is necessary when replacing any of the following parts.

Part Replaced	Adjustment
Image Drum Cartridge	Reset the image drum counter (refer to User's manual).
Main Control Board	EEPROM data Upload / Download

4.2.1 Uploading/Downloading EEPROM data

When the controller printed circuit board is replaced, the contents of the old EEPROM shall be copied to the new EEPROM on the new board to preserve customer settings. For the purpose, use the EEPROM operation on the Option of the Maintenance Utility. To copy follow the steps below.

(1) Be sure to confirm that the printer and the PC are connected with a centronics I/F cable. Then execute the Maintenance Utility. (Note: Printer driver shall be deinstalled.)

(2) Select the Option on the Maintenance Utility.

(3) Click the "UPLOAD EEPROM" button on the "EEPROM Operations".

(4) The contents of the EEPROM data is displayed on the "DIALOG" of the Maintenance Utility. The contents of the old EEPROM is now copied into the memory of the PC.

(5) Replace the controller P.C.B. with a new one while it displays the above "DIALOG".

(6) After the replacement, click "Download EEPROM" on the "EEPROM Operations". EEPROM upload has been completed.

In case of troubles such as centronics I/F failure, etc. EEPROM data may not be uploaded properly. In such case, it is necessary to adjust the following settings manually after the replacement using the Maintenance Utility.

- Factory setting (ODA/OEL/INT-A/INT-L)

The maintenance utility is designed to be used only by field engineer and it should not be released to the end-users.

5. PERIODICAL MAINTENANCE

5.1 Periodical Replacement Parts

The parts are to be replaced periodically as specified below:

Part name	Condition for replacement	Cleaning	Remarks
• Toner cartridge(Type 5)	About 2000(ODA) or 2500(OEL/INT)sheets of paper have been printed.	• LED head	Consumables
• Toner cartridge(Type 8)	About 4,000 sheets of paper have been printed.	• LED head	Consumables
• Image drum cartridge (Type 8)	About 20,000 sheets of paper have been printed. See 1.4. (14)		Consumables

5.2 Cleaning

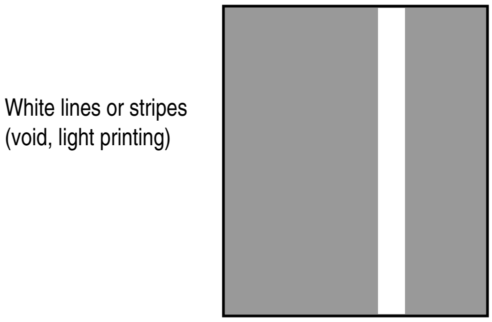
Remove any toner or dust accumulated inside the printer. Clean in and around the printer with a piece of cloth when necessary. Use the handy cleaner (service tool) to clean inside the printer.

Note: Do not touch the image drum, LED lens array, or LED head connector block.

5.2.1 Cleaning of LED Lens Array

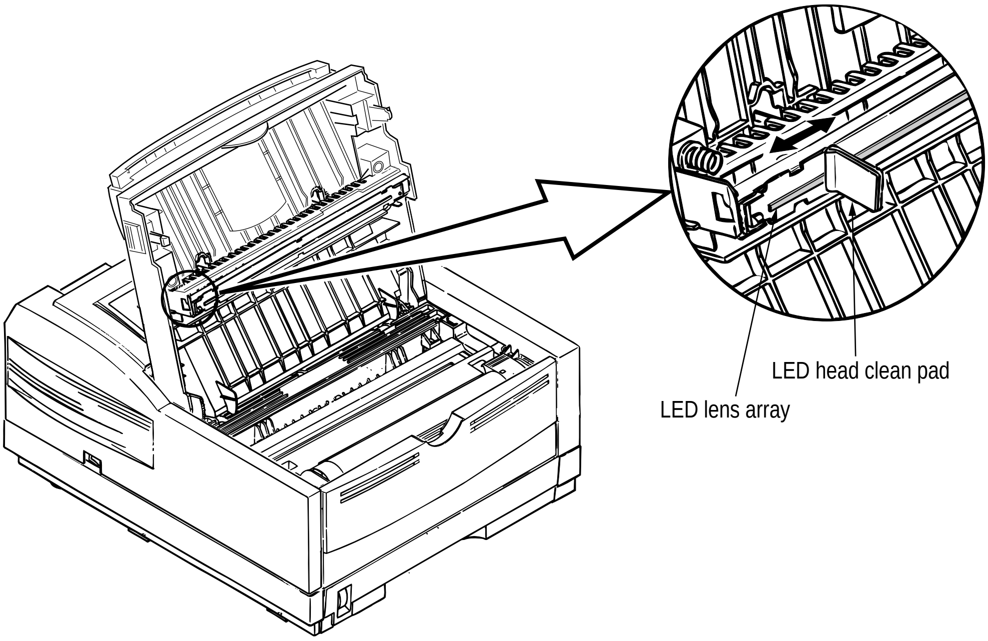
Clean the LED lens array or replace the toner cartridge when white lines or stripes (void, light printing) are generated vertically down the page, as shown below.

Note: The LED lens array must be cleaned with an LED head cleaner included in the replacement toner kit.



(1) Set the LED head cleaner to the LED lens array as shown in the figure, then slide the cleaner back and forth horizontally several times to clean the head.

Note: Gently press the LED head cleaner onto the LED lens array.



(2) Throw the cleaner pad away.

5.2.2 Cleaning Page Function

There is a charge roller cleaning function with this printer, which can be executed by the user.

(1) While the printer is in off-line mode, press both ◄ and ► keys simultaneously for at least 2 seconds. The printer enters the cleaning mode.

(2) The LCD displays "CLEANING" on the upper line, and on the lower line, "MANUAL LETTER REQUEST" is displayed, scrolling one character width at a time from right to left "LETTER" on the lower line may instead be "A4" depending on the printer designation. While the lower line scrolls the message, the message on the upper line remains fixed in place.

When the above messages appear on the LCD, the user can verify that the printer has entered the cleaning mode and that it is requesting insertion of a letter (or A4) size paper into the manual feederslot.

(3) Insert a sheet of paper into the manual feeder slot.

(4) Toner attached to the image drum is transferred onto the inserted sheet, and the sheet is ejected with the toner residues printed. While this process is going on, the LCD displays "PRINT CLEANING" message.

(5) The printer returns to off-line mode.

6. TROUBLESHOOTING PROCEDURES

6.1 Troubleshooting Tips

(1) Check the troubleshooting section in the Printer Handbook.

(2) Gather as much information about the situation as possible.

(3) Inspect the equipment under the conditions close to those in which the problem had occurred.

6.2 Points to Check before Correcting Image Problems

(1) Is the printer being run in proper ambient conditions?

(2) Are supplies (toner) and routine replacement part (image drum cartridge) being replaced properly?

(3) Is the printing paper normal (acceptable quality)?

(4) Is the image drum cartridge being loaded properly?

6.3 Tips for Correcting Image Problems

(1) Do not touch, or bring foreign matter into contact with the surface of the image drum.

(2) Do not expose the image drum to direct sunlight.

(3) Keep hands off the fuser unit as it heats up during operation.

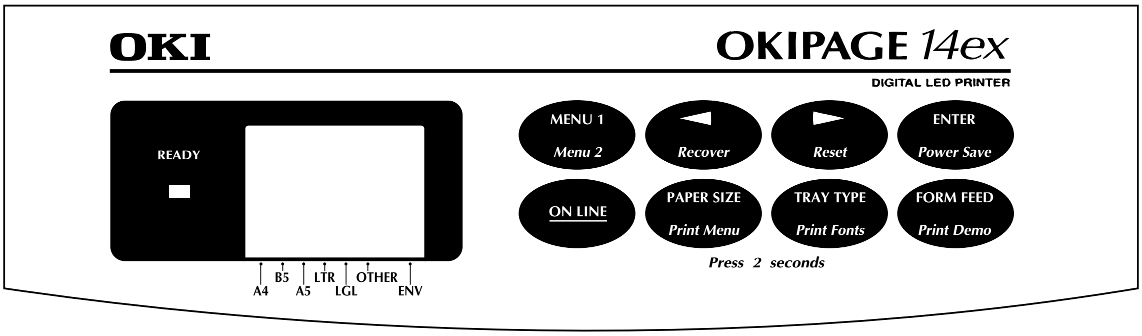
(4) Do not expose the image drum to light for longer than 5 minutes at room temperature.

6.4 Preparation for Troubleshooting

(1) Operator panel display

The failure status of the printer is displayed by the liquid crystal display (LCD) of the operator panel. Take proper corrective action as directed by messages which are being displayed on the LCD.

<ODA/OEL/INT>



Status message display

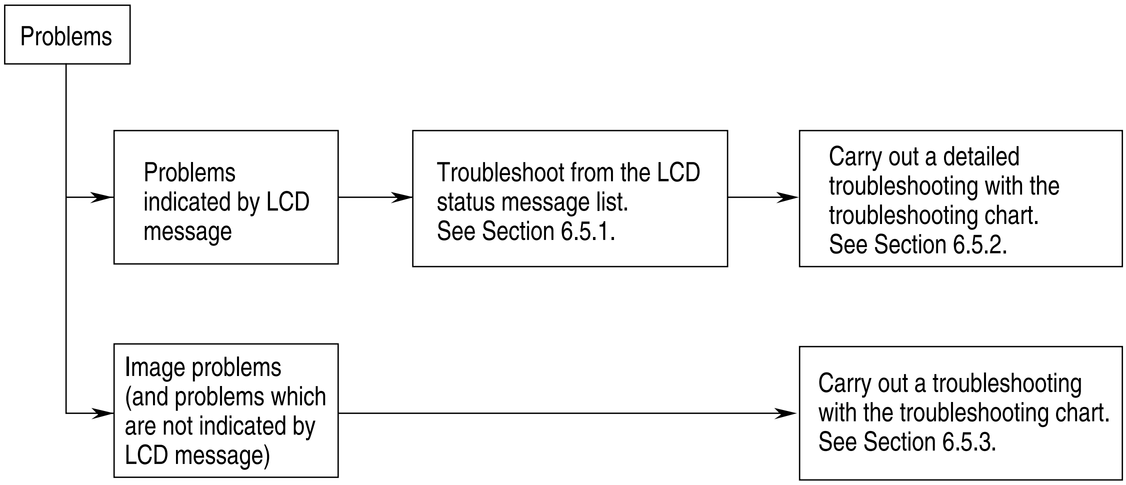
Ready LED display

: Off   : Blinking

: On   : Undefined

6.5 Troubleshooting Flow

Should there be a problem with the printer, carry out troubleshooting according to the following procedure flow:



6.5.1 LCD Status Message/Problem List

The status and problems which may be displayed by messages on the LCD are listed in Table 6-1.

Table 6-1(1/9)

Category	LCD status message	Problem or status		Remedy
Controller errors	ERROR 0n aaaaaaaa	An error occurred in the controller. n = Exception Code aaaaaaaa = Error Address		– Normal operation cannot be ensured. Turn the power off, then back on to restart. – If normal operation is not recovered by this restart procedure, replace the main control board. Note 1) Since this printer uses NKK4, this error that will result in Coprocessor Instruction Exception Interrupt will not occur.
		Code (nn)	Error	
		1~3 D~F	Reserved	
		4	Address Error Exception (Load command, command fetch)	
		5	Address Error Exception (Store command)	
		6	Bus Error Exception (Command fetch)	
		7	Bus Error Exception (Load command, store command)	
		8	System Call Extension	
		9	Break Point Exception	
		A	Reserved Instruction Exception	
		B	Coprocessor Unusable Exception (Note 1)	
		C	Arithmetic Overflow Exception	

Table 6-1 (2/9)

Category	LCD status message	Problem or status		Remedy
Controller errors (continued)	ERROR nn	An error occurred in the controller.		– Turn the power off, then back on to recover from the error. – If normal operation is not recovered by this restart procedure, use the following remedial actions.
		Code (nn)	Error	Remedy
		10	An error was detected by program ROM check.	Replace the main control board.
		20	An error was detected by font ROM check.	(Can't Happen)
		30	An error was detected by resident RAM check.	Replace the main control board.
		40	An error was detected by EEPROM check.	Replace the EEPROM or main control board.
		41	EEPROM installation error. OP14i have 16Kbit EEPROM, and this error is indicated when 4Kbit EEPROM is installed. This error dose not occur in the OP14ex since they are designed to use both 4K/16Kbit.	Replace the EEPROM or main control board.
		50	An error was detected by optional software ROM check.	Check the optional software ROM board for proper connection or replace it.
		51	An error was detected by Flash SIMM.	Check the optional Flash SIMM for proper connection or replace it.
		60	An error was detected by optional RAM check.	– Check the optional RAM board for proper connection. – Check the mounting position of short plugs and additional RAM chips (see Section 7.4). – Replace the optional RAM board.
		61	Data bus Error between Cos and Databus for Option DRAMs.	Check the optional DRAM SIMM for proper connection or replace it.
		70	A failure occurred with the Fan motor.	– Check the fan motor for proper connection and for any presence of foreign matter in the fan (see Section 6.5.2-⑥). – Replace the fan or the main control board.
		71	A failure occurred with the fuser (timeout error etc.).	See Section 6.5.2 - ④.

Table 6-1 (3/9)

Category	LCD status message	Code (nn)	Error	Remedy
Controller errors (continued)	■ ERROR nn	72	A failure occurred with the fuser (thermistor open error).	See Section 6.5.2 - ④.
		73	A failure occurred with the fuser (thermistor short error).	See Section 6.5.2 - ④.
		74	SSIO Error	– Check the connection between the main control board and the power supply/sensor board. – Replace the main control board or power supply/sensor board.
		77	A toner sensor fault has occurred when the TOTAL DRAM COUNT is 30 or less.	– Check the installing of Image drum unit. – Replace the power supply/sensor board.
		80	I/F timeout occurred between the main control board and the operator panel.	– Check the operator panel for proper connection. – Replace the flexible cable, operator panel or main control board.
		90	A watchdog timer timeout occurred.	– Turn the power off, then back on again. – Replace the main control board. Note: When replacing the main control board, be sure to install the EEPROM from the old board onto the new board.
		91	CPU Error	– Turn the power off, then back on again. – Replace the main control board. Note: When replacing the main control board, be sure to install the EEPROM from the old board onto the new board.
		F0	Monitor error (double weight)	– Turn the power off, then back on again. – Replace the main control board. Note: When replacing the main control board, be sure to install the EEPROM from the old board onto the new board.
		F1	Monitor error (argument error)	– Turn the power off, then back on again. – Replace the main control board. Note: When replacing the main control board, be sure to install the EEPROM from the old board onto the new board.
		F2	Optional Timeout error	See Section 6.5.2 - ⑤.
		F3	Optional status error	See Section 6.5.2 - ⑤.
		F4	BG program error	– Turn the power off, then back on again. – Replace the main control board. Note: When replacing the main control board, be sure to install the EEPROM from the old board onto the new board.

Table 6-1 (4/9)

Category	LCD status message	Code (nn)	Problem or status: Error	Remedy
Controller errors (continued)	■ ERROR nn	F5	System timer program error. Defect in the cable of the front feeder paper sensor and the 2-pin connector on the main control board. Poor connection of connectors.	– Turn the power off, then back on again. – Repair or replace the defective front feeder paper sensor cable and 2-pin connector on the main control board or reconnect the connectors. – Replace the main control board.
		F6	IPT2 program error	– Turn the power off, then back on again. – Replace the main control board.
		F7	IPT1 program error	
Interface errors	□ HOST I/F RS232C		An error occurred in the serial I/F. This message is displayed when a parity error, a framing error or an overrun error is detected. (When an error occurred in serial I/F)	– Press the operator panel *RECOVER* key to release the error display. When serial I/F board has been installed, – Check the settings related serial I/F of the menu. – Replace the serial I/F cable or main control board.
Cover open	■ COVER OPEN		The upper cover was opened.	– Close the cover to release the error display. – If the display does not change after this procedure, replace the power supply/sensor board.
	■ COVER T2 OPEN		The High Capacity Second Paper Feeder option cover was opened.	– Close the cover to release the error display. – Check the connection between the main control board and TQSB-2-PCB. – Replace the main control board, TQSB-2-PCB or connector.
Jam errors	■ tray INPUTJAM		A jam occurred during paper hopping from the tray. tray : TRAY1, TRAY2, FEEDER, MANUAL	– Check the paper in the cassette. Open and then close the cover. When the cover is closed, recovery printing is performed and the error display is released. – If this error occurs frequently, see Section 6.5.2.②-1.

Table 6-1 (5/9)

Category	LCD status message	Problem or status	Remedy
Jam errors (continued)	■ tray FEED JAM	A jam occurred during paper feeding after completion of paper hopping from the tray. tray : TRAY1, TRAY2, FEEDER	– Open the cover, remove the paper, then close the cover. When the cover is closed, recovery printing is performed and the error display is released. – If this error occurs frequently, see Section 6.5.2.②-2.
	■ tray EXIT JAM	A jam occurred during paper ejecting. tray : TRAY1, TRAY2, FEEDER, MANUAL	– Open the cover, remove the paper, then close the cover. When the cover is closed, recovery printing is performed and the error display is released. – If this error occurs frequently, see Section 6.5.2.②-3.
Paper size error	■ tray SIZE ERR	Paper of improper size is being fed from the tray. tray : TRAY1, TRAY2, FEEDER, MANUAL	– Check the paper in the tray or check to see if more than one sheet of paper were being fed simultaneously. – Set the designated paper in the tray. – Open the cover, then close it to perform recovery printing and release the error display. – If this error occurs frequently, see Section 6.5.2.③.
Tray paper out	■ tray PAPEROUT	The tray has run out of paper. tray : TRAY1, TRAY2, FEEDER	Load paper in the tray.
Size error	■ tray #PAPER REQUEST (The indicate rotate)	Loading of paper indicated by the first line message is requested. The paper size may be one of the followings: tray : TRAY1, TRAY2, FEEDER Paper : LETTER, EXECUTIV, LEGAL 14, LEGAL 13, A4 SIZE, A5 SIZE, A6 SIZE, B5 SIZE, COM-9, COM-10, MONARCH, DL ENV, C5 ENV	Load the requested paper in the tray.
	□ MANUAL #REQUEST (The indicate rotate)	Manual loading of paper indicated by the first line message is requested. The paper size one of the followings: LETTER, EXECUTIV, LEGAL 14, LEGAL 13, A4 SIZE, A5 SIZE, A6 SIZE, B5 SIZE, FREE SIZE, COM-10, MONARCH, DL ENV, C5 ENV	

Table 6-1 (6/9)

Category	LCD status message	Problem or status	Remedy
Buffer overflow	REC BUFF OVERFLOW	The receive buffer is overflowing.	– Press the operator panel *RECOVER* key on the operator panel to release the error display. – Change the setting of the host or printer so that the host can detect the busy status of the printer. Resend the data from the host to the printer. – Replace the interface cable or main control board.
	MEMORY OVERFLOW	The page buffer is overflowing because it received too much data for printing on the page. Macro buffer is overflowing. The DLL buffer is overflowing.	– Press the *RECOVER* key to release the error display. – Install additional optional RAM board or reduce the print data.
	PRINT OVERRUN	The printer overrun because the print data is too complicated to be printed.	– Press the *RECOVER* key on the operator panel to release the error display. – Simplify page data formatting.
Daily status	OFF-LINE emulate	The printer is in the off-line mode. The second line indicates the emulation. emulate : AUTO, PCL, PPR, FX, HEX	Normal operation.
	ACTIVE	The printer is processing data.	
	PRINTING	The printer is printing a page.	
	DATA emulate	The printer is processing data in the on-line mode. Ready ON : The data that is not printed remains in the buffer. Ready flashing : The printer is receiving data or in printing process. emulate : AUTO, PCL, PPR, FX, HEX	

Table 6-1 (7/9)

Category	LCD status message	Problem or status	Remedy
Daily status (continued)	PRINT FONTS	All fonts of the printer are being printed during self-test. Ready ON : Executed by command entry. Ready flashing : Executed by key operation.	Normal operation.
	PRINT MENU	The current menu setting is being printed. Ready ON : Executed by command entry. Ready flashing : Executed by key operation.	
	■■■■■■■■ ■■■■■■■■	Message displayed when the power is turned on. When the power is turned on, the LEDs are turned on for approximately 1 second, conducting a test to verify the conditions of the LEDs and LCD.	
	INITIAL- IZING	Message displayed to indicate that the controller is undergoing an initialization when the power is turned on. This message is displayed after the turning on of the LEDs as described above.	
	FMLOADING	Indicates in Cold mode due to downloading to flash memory.	
	FM ERROR	Indicates that an error occurs during downloading to flash memory or deleting.	
	PRINT DEMO	The demo page is being printed. Ready LED on : Executed by command entry. Ready LED blinking : Executed by key operation.	

Table 6-1 (8/9)

Category	LCD status message	Problem or status	Remedy
Daily status (continued)	nnn/mmm	When the number of copies being printed is two or more, the number of copies being printed is displayed. This massage is displayed together with another message on the first line. nnn : Current page mmm : Total page	Normal operation.
	PRINT CLEANING	This message is displayed when the printer is performing the cleaning print.	
	CLEANING MANUAL# (The indicate rotate)	Manual loading of paper indicated by the second line message is being reequested for cleaning. The paper size(#) may be one of the following: # : LETTER REQUEST, A4 SIZE REQUEST	
	RESET	The data which remained unprinted in the buffer is deleted and the printer is initialized to user default settings. The temporary DLLs, macros and user pattern are deleted.	
	RESET TO SAVE	This message is displayed when the printer cannot reset automatically to exit from the menu because there are date and DLL's and macros having temporary attributes when the printer is changed from set mode to another mode.	
	TONERLOW	Toner is running out. This message is displayed together with another message on the first line. Normal operation can be continued.	Replace the toner cartridge.
	TONERSNS	A fault occurred with the toner sensor. This message is displayed together with another message on the first line. Normal operation can be continued.	Replace the power supply/sensor board.

Table 6-1 (9/9)

Category	LCD status message	Problem or status	Remedy
Daily status (continued)	□ TONEREMP	Displays that the amount of toner is near empty (this status will appear after 100 sheets from a TONER LOW indication). It is indicated by being combined with other messages in the first line. Normal operation can be continued.	
	■ TONEREMP CHG CART	Displays that the amount of toner is near empty. After 100 sheets from a TONER LOW indication, this status will appear and the printing be stopped. If pressing ON-LINE SW, other 31 sheets can be printed and stopped. And from the next time on, the printing is stopped each sheet.	
	□ CHG DRUM	This message is displayed together with another message on the first line. Normal operation can be continued.	– Replace the image drum cartridge. – After replacing the drum cartrridge, reset the drum counter. (refer to the Printer Handbook)
	□ PWR SAVE	The printer is in the power -saving mode. This message is displayed together with another message on the first line.	Normal operation.
	■ CHG DRUM	Informs drum life end. It can be temporarily released by opening and closing the cover or pressing the “ON LINE” switch, but basically, the drum must be replaced.	
	■ EEPROM RESET'NG	Indicates an error from the result of checking EEPROM ID No. The printer will display this for a few seconds and reset the EEPROM to the factory default for a continuous operation. It will occur with a new EEPROM.	
	■ ROM-SIMM ERROR	Reformat error including CPCMCIA header of ROM-SIMM and byte sum. It will be displayed for 2 seconds at power-on or just before a shift to ON LINE.	

6.5.2 LCD Message Troubleshooting

If the problems cannot be corrected by using the LCD status message/problem list, follow the troubleshooting flowcharts given here to deal with them.

No.	Trouble	Flowchart number
1.	The printer does not work normally after the power is turned on.	①
2.	Jam alarm ├─Paper input jam ├─Paper feed jam └─Paper exit jam	 ②-1 ②-2 ②-3
3.	Paper size error	③
4.	Fusing unit error	④
5.	SSIO (Synchronous Serial Input/Output) error I/F timeout (no response) between the printer and an optional tray (High Capacity Second Paper Feeder, Power Envelope Feeder).	⑤
6.	Fan error	⑥

① The printer does not work normally after the power is turned on.

• Turn the power off, then back on.

• Is all black message being displayed by the LCD display? [■■■■■■■■■ / ■■■■■■■■■]

- • No Is the AC cord being connected properly?
  - • No Connect the AC cord properly.
- Yes Is +5 V being applied between Pins 11 and 21 of POWER connector on the main control board?

  Pin 21 : 0 V
  Pin 11 : +5 V

  Ⓐ
  - • No Is the connection between POWER connector on the main control board and connector CN3 on the power supply/sensor board being made properly?
    - No Correct the connection.
  - Yes Go to ①-1.
- Yes Is +12V being applied between Pins 23 and 24 (GND) of POWER connector?

  Pin 23 : 0 V
  Pin 24 : +12V

  - • No Go to Ⓐ
- Yes Is the flexible cable for the operator panel assy being connected to the PANEL connector on the control board and the connector CN1 on the OLCC board properly?
  - • No Connect the flexible cable properly.
- Yes Replace the operator panel assy or flexible cable.
- Has the problem been solved?
  - • No Replace the main control board.
- Yes End

Yes Is [INITIAL-IZING] message being displayed by the LCD display?

- • No Replace the main control board.

Yes Is [ON-LINE XXX] message being displayed by the LCD display?

XXX: PCL, Auto, Adobe PS, HEX DUMP, PPR, FX

- • No Take actions according to the LCD status message/problem list (see Section 6.5.1 for corrective actions).

Yes End

①-1

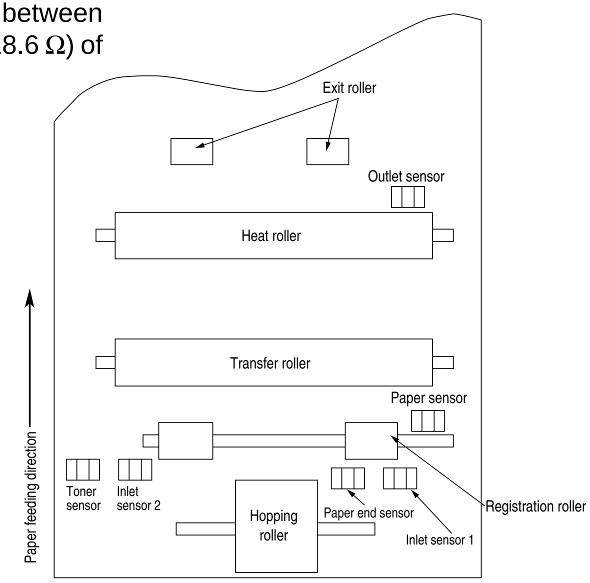
Take the measurement of the following voltage readings at connector CN3 on the power supply board without main control board:

Voltage between Pins 11 and 16: ... about 5VDC
Voltage between Pins 17 and 16: ... about 30VDC
Voltage between Pins 24 and 16: ... about 12VDC

Yes   Replace the AC transformer.

②-1 Paper input jam

- Does the JAM error occur when the power is turned on?
  - Yes — Is the paper at the inlet sensor?
    - Yes — Remove the paper.
  - No — Is the operation of the inlet sensor plate normal (moves freely when it is touched)?
    - No — Replace the inlet sensor plate.
  - Yes — Clean the inlet sensor on the power supply/sensor board, or replace the power supply/ sensor board.
- No — Does the JAM alarm occur after paper feeding?
  - Yes — Is the paper fed to the inlet sensor plate?
    - Yes — Is the operation of the input sensor plate normal (moves freely when it is touched)?
      - No — Replace the inlet sensor plate.
    - Yes — Clean the inlet sensor on the power supply/sensor board or replace the power supply/ sensor board.
  - No — Replace the hopping roller rubber or paper cassette.
- No — Is the hopping roller rotating?
  - Yes — Set the paper tray properly.
- No — Is the registration motor rotating?
  - Yes — Replace the one-way clutch gear of the hopping roller assembly.
- No — Is RM connector on the main control board being connected properly?
  - No — Connect RM connector properly.
- Yes — Is the coil resistance (normal resistance: both between Pins 1 and 2, as well as Pins 3 and 4 are about 18.6 Ω) of the registration motor normal?
  - No — Replace the registration motor.
- Yes — Replace the main control board.



②-2 Paper feed jam

- Does the paper feed jam occur when the power is turned on?
  - Yes — Is the paper on the paper sensor plate?
    - • Yes — Remove the paper.
  - No — Is the operation of the paper sensor plate normal (moves freely when it is touched)?
    - • No — Replace the paper sensor plate.
  - Yes — Replace the power supply/sensor board.
- No — Has the paper reached the paper sensor plate?
  - No — Is the registration roller rotating?
    - • No — Replace the one-way clutch gear of the hopping roller assembly.
  - Yes — Is the image drum cartridge being set properly?
    - • No — Set the image drum cartridge properly.
  - Yes — Check the hopping roller assembly or tray.
- Yes — Has the paper reached the outlet sensor plate?
  - Yes — Is the operation of the outlet sensor plate normal (moves freely when it is touched)?
    - • No — Replace the outlet sensor plate.
  - Yes — Clean the outlet sensor on the power supply/sensor board or replace the power supply/sensor board.
- No — Is the main/drum motor rotating?
  - No — Is DM connector on the main control board being connected properly?
    - • No — Connect DM connector properly.
  - Yes — Is the coil resistance (normal resistance: both between Pins l and 2, as well as Pins 3 and 4 are about 4.2Ω) of the main/drum motor correct ?
    - • No — Replace the main/drum motor.
  - Yes — Replace the main control board.
- Yes — Is the transfer roller rotating?

↓ ②-2-a

②-2-a

- No Check the gears (transfer roller gear, idle gear and reduction gear).
- Yes Is the fusing unit being installed properly?
  - No Install the fusing unit properly.
- Yes Is the image drum cartridge being set properly?
  - No Set the image drum cartridge properly.
- Yes Clean the paper sensor on the power supply/sensor board or replace the power supply/sensor board.

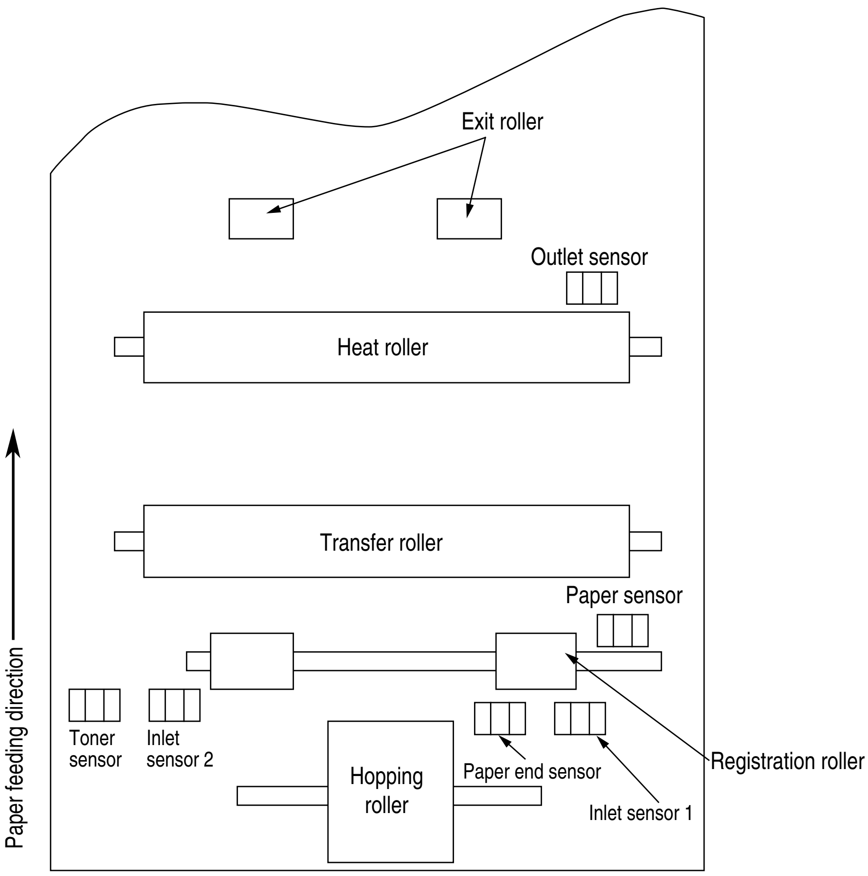
[JAM error]

②-3 Paper exit jam

- Does the paper exit jam error occur when the power is turned on?
  - Yes Is the paper on the outlet sensor plate?
    - Yes Remove the paper.
  - No In the operation of the outlet sensor plate normal (moves freely when it is touched)?
    - No Replace the outlet sensor plate.
  - Yes Clean the outlet sensor on the power supply/sensor board or replace the power supply/ sensor board.
- No Is the face-up stacker pulled out completely from the printer or, pushed into the printer completely?
  - No Pull the face-up stacker out of the printer completely or push it into the printer completely.
- Yes Is the eject roller assembly being installed properly?
  - No Install the eject roller assembly properly.
- Yes Has the coil spring come off the eject roller assembly?
  - Yes Install the coil spring to the eject roller assembly.
- No Replace the eject roller assembly.

③ Paper size error

- Is paper of the specified size being used?
  - No — Use paper of the specified size.
- Yes — Are inlet sensor plates 1 and 2 operating properly (moves freely when they are touched)?
  - No — Replace the inlet sensor plate or clean the inlet sensor on the power supply/sensor board.
- Yes — Does the outlet sensor plate operate properly (moves freely when it is touched)?
  - No — Replace the outlet sensor plate or clean the outlet sensor on the power supply/sensor board.
- Yes — Replace the power supply/sensor board.



④ Fusing unit error (ERROR 71) (ERROR 72) (ERROR 73)

- Turn the power off, then back on again.
- Yes — Is the thermistor open or shorted? Measure the resistance between thermistor contacts (heater contacts 120V/3Ω or 240V/10Ω, and thermistor contacts 220KΩ at room temperature) (see Figure 6-2 or Section 7.3).
  - Yes — Replace the fusing unit.
- No — Do the thermistor contacts touch the contact assembly properly when the fusing unit is mounted in the printer?
  - No — Adjust the contacts of the contact assembly.
- Yes — Is the heater of the fusing unit turned on (when the heater is turned on, light is emitted)?
  - Yes — Check the thermistor contacts or replace the main control board or the fusing unit.
- No — Is the AC voltage being supplied to the connector for the heater of the power supply board? (see Figure 6-2)
  - No — Replace the main control board or the power supply/sensor board.
- Yes — Check the heat contacts of the fusing unit and the contact assembly for poor contact (see Figure 6-4 contact Ⓖ).

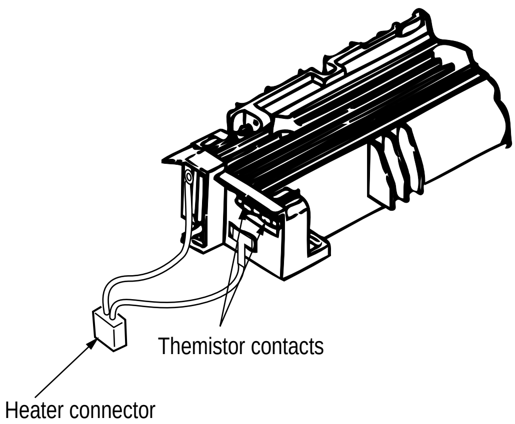


Figure 6-2

⑤ Synchronous serial I/O error (ERROR 74) or I/F timeout between printer and optional tray (ERROR F2, F3)

- Is an option tray (High Capacity Second Paper Feeder or Power Envelope Feeder) being used?
  - Yes — Is the cable between the main control board and the optional tray being connected properly?
    - No — Connect the cable properly.
  - Yes — Replace the main control board.
  - Has the problem been solved?
    - No — Check the problem by following the High Capacity Second Paper Feeder maintenance manual of Appendix F.
  - Yes — End
- No — Replace the main control board.
- Has the problem been solved?
  - No — Replace the power supply/sensor board.
- Yes — End

⑥ Fan error (ERROR 70)

- Is the fan rotating?
  - Yes — Replace the main control board.
- No — Is FAN connector on the main control board being connected properly?
  - No — Connect FAN connector properly.
- Yes — Replace the fan or main control board.

6.5.3 Image Troubleshooting

Procedures for troubleshooting for abnormal image printouts are explained below. Figure 6-3 below shows typical abnormal images.

Problem	Flowchart number
Images are light or blurred entirely (Figure 6-3 Ⓐ)	①
Dark background density (Figure 6-3 Ⓑ)	②
Blank paper is output (Figure 6-3 Ⓒ)	③
Black vertical belts or stripes (Figure 6-3 Ⓓ)	④
Cyclical defect (Figure 6-3 Ⓔ)	⑤
Prints voids	⑥
Poor fusing (images are blurred or peels off when the printed characters and images on the paper are touched by hand)	⑦
White vertical belts or streaks (Figure 6-3 Ⓕ)	⑧

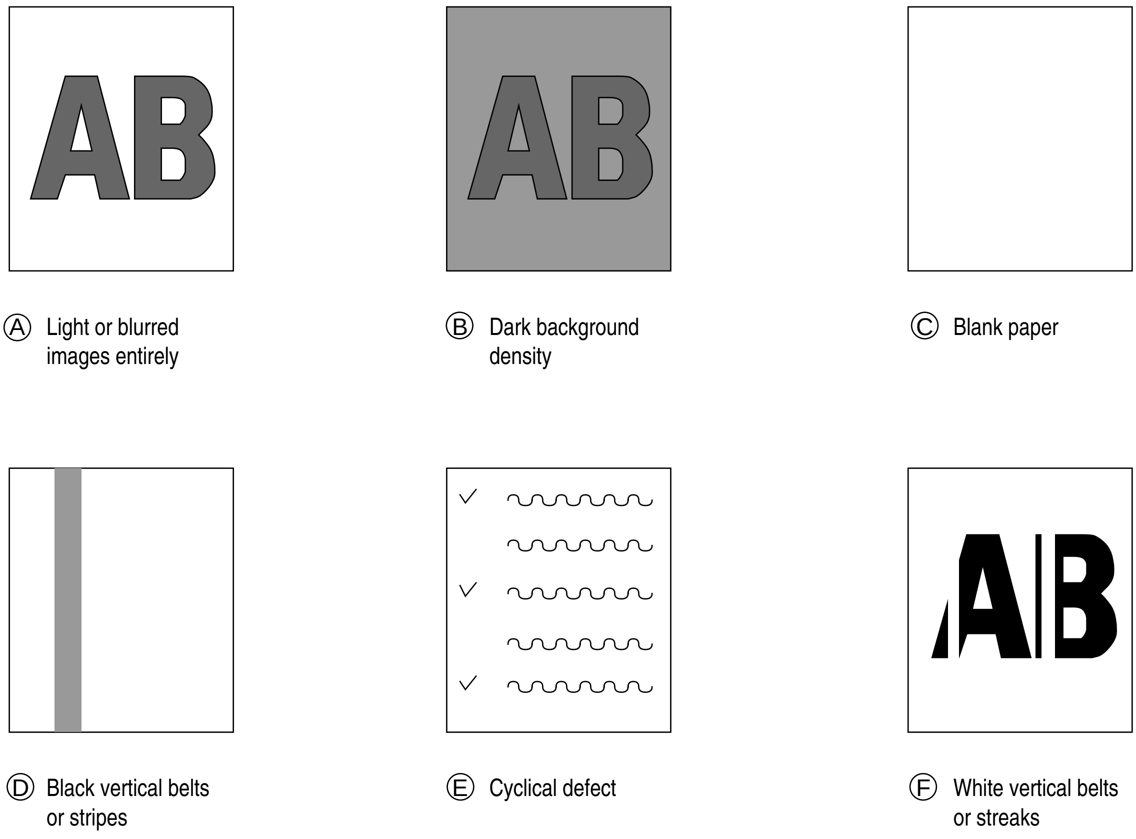
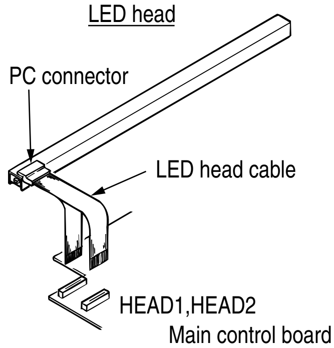


Figure 6-3

① Images are light or blurred entirely.

- Is toner low (is the TONER LOW message displayed)?
  - • Yes Supply toner.
- No Is paper of the specified grade being used?
  - • No Use paper of the specified grade.
- Yes Is the lens surface of the LED head dirty?
  - • Yes Clean the lens.
- No Is the LED head being installed properly (check the HEAD1 and HEAD2 connectors of the main control board and PC connector on the LED head for proper connection)?
  - • No Install the LED head properly.



- Yes Is the contact plate of the transfer roller in contact with the contact assembly of the power supply/sensor board properly (see Figure 6-5)?
  - • No Adjust the contact plate of the transfer roller to make a proper contact with the power supply/sensor board and shaft of the transfer roller.
- Yes Are the contact of the developing roller and the contact of the toner supply roller of the image drum cartrige in contact with the contact assembly properly (see Figure 6-4 Ⓐ and Ⓑ)?
  - • No Adjust the contacts of the developing and toner supply roller to make a proper contact with the contact assembly.
- Yes Replace the transfer roller.
- Has the problem been solved?
  - • Yes End
- No Replace the image drum cartridge.
- Has the problem been solved?
  - • Yes End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key and reset the drum counter (see Printer Handbook).
- No Is the tension between the back-up roller (7.52kg) and the surface of back-up roller normal?
  - • No Replace the back-up roller or bias spring.
- Yes Replace the main control board or power supply/sensor board.

② Dark background density

- Has the image drum been exposed to external light?
  - Yes — Install the image drum in the printer and wait about 30 minutes.
- No — Perform the cleaning page function (see Section 5.2.2).
- Has the problem been solved?
  - Yes — End
- No — Is the heat roller of the fusing unit dirty?
  - Yes — Clean the heat roller.
- No — Is the contact of the cleaning roller of the image drum cartridge in contact with the contact assembly properly (see Figure 6-4 ©)?
  - No — Adjust the contact of the cleaning roller to make a proper contact with the contact assembly.
- Yes — Replace the image drum cartridge.
- Has the problem been solved?
  - Yes — End

    Note: After replacing the image drum cartridge, set the printer to the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see Printer Handbook).
- No — Replace the main control board or power supply/sensor board.

③ Blank paper is output.

- Is the LED head being connected properly (check the HEAD1 and HEAD2 connectors on the main control board and PC connector on the LED head)?

  - No Connect the LED head properly or replace the head cable(s).

- Yes Is the contact of the image drum cartrige in proper contact with the ground contact properly (see Figure 6-4 Ⓒ)?

  - No Adjust the ground contact (Drum) of the contact assembly.

- Yes Replace the LED head.

- Has the problem been solved?

  - Yes End

- No Replace the main control board or power supply/sensor board.

④ Black vertical belts or stripes

- Perform the cleaning page function (see Section 5.2.2).
- Has the problem been solved?
  - Yes End.
- No Replace the image drum cartridge.
- Has the problem been solved?
  - Yes End

    Note: After replacing the image drum cartridge, set the printer to the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see Printer Handbook).
- Clean the LED lens array of the LED head.
- Has the problem been solved?
  - Yes End.
- No Replace the LED head.
- Has the problem been solved?
  - Yes End
- No Replace the main control board or power supply/sensor board.

⑤ Cyclical defect

	Frequency	Remedy
Image drum	3.71" (94.2mm)	Replace or clean the image drum cartridge.
Developing roller	1.86" (47.12mm)	Replace the image drum cartridge.
Toner supply roller	2.96" (75.27mm)	Replace the image drum cartridge.
Charging roller	1.21" (30.63mm)	Replace the image drum cartridge.
Cleaning roller	0.93" (23.56mm)	Replace the image drum cartridge.
Transfer roller	1.95" (49.6mm)	Replace the transfer roller.
Heat roller	2.44" (62.0mm)	Replace the fusing unit assy.
Back-up roller	2.73" (69.4mm)	Replace the back-up roller.

Note: After replacing the image drum cartridge, set the printer to the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see Printer Handbook).

⑥ Prints voids

- Is the contact plate of the transfer roller in proper contact with the power supply/sensor board (see Figure 6-5)?

  - • No   Adjust the contact plate so that it touches the power supply/sensor board and the shaft of the transfer roller properly.

- Yes   Replace the transfer roller.
- Has the problem been solved?

  - • Yes   End

- No   Is the tension between the back-up roller (7.52kg) and the surface of back-up roller normal?

  - • No   Replace the back-up roller or bias spring.

- Yes   Are the contacts of the toner supply roller, developing roller, image drum and charging roller in proper contact with the contact assy (see Figure 6-4 Ⓐ,Ⓑ,Ⓒ,Ⓓ,Ⓔ)?

  - • No   Adjust the contacts so that they touch the contact assy properly.

- Yes   Replace the image drum cartridge.
- Has the problem been solved?

  - • Yes   End

    Note: After replacing the image drum cartridge, set the printer in the user maintenance mode by turning the power on while pressing the MENU key, and reset the drum counter (see Printer Handbook).

- No   Is the LED head being installed properly (check HEAD1 and HEAD 2 connectors on the main control board and PC Connector on the LED head)?

  - • No   Install the LED head properly.

- Yes   Replace the LED head or the head cable(s).
- Has the problem been solved?
- Yes   End
- No   Replace the main control board or power supply/sensor board.

⑦ Poor fusing (images are blurred or peels off when the printed characters and images on the paper are touched by hand)

- Is paper of the specified grade being used?
  - No — Use paper of the specified grade.
- Yes — Is the tension between the back-up roller (7.52kg) and the surface of back-up roller normal?
  - No — Replace the back-up roller or bias spring.
- Yes — Is the connector of the fusing unit assy on the power supply board being connected properly?
  - No — Connect the fusing unit connector properly.
- Yes — Replace the fusing unit assy.
- Has the problem been solved?
  - Yes — End
- No — Replace the main control board or power supply/sensor board.

⑧ White vertical belts or streaks

Are the LED lens dirty?

- Yes Clean the LED lens.

No Is the contact plate of the transfer roller in proper contact with the power supply/sensor board (see Figure 6-5)?

- No Adjust the contact plate to make a proper contact with the power supply/sensor board.

Yes Replace the transfer roller.

Has the problem been solved?

- Yes End

No Is the tension between the back-up roller (7.52kg) and the surface of back-up roller normal?

- No Replace the back-up roller or bias spring.

Yes Is the LED head being installed properly (check HEAD1 and HEAD2 connectors on the main control board and PC connector on the LED head)?

- No Install the LED head properly.

Yes Replace the LED head.

Has the problem been solved?

- Yes End

Yes Replace the image drum cartridge.

Has the problem been solved?

- Yes End

Note: After replacing the image drum cartridge, set the printer to the user maintenance mode by turning the power on while pressing the MENU key. Reset the drum counter (see Printer Handobook).

No Replace the main control board or power supply/sensor board.

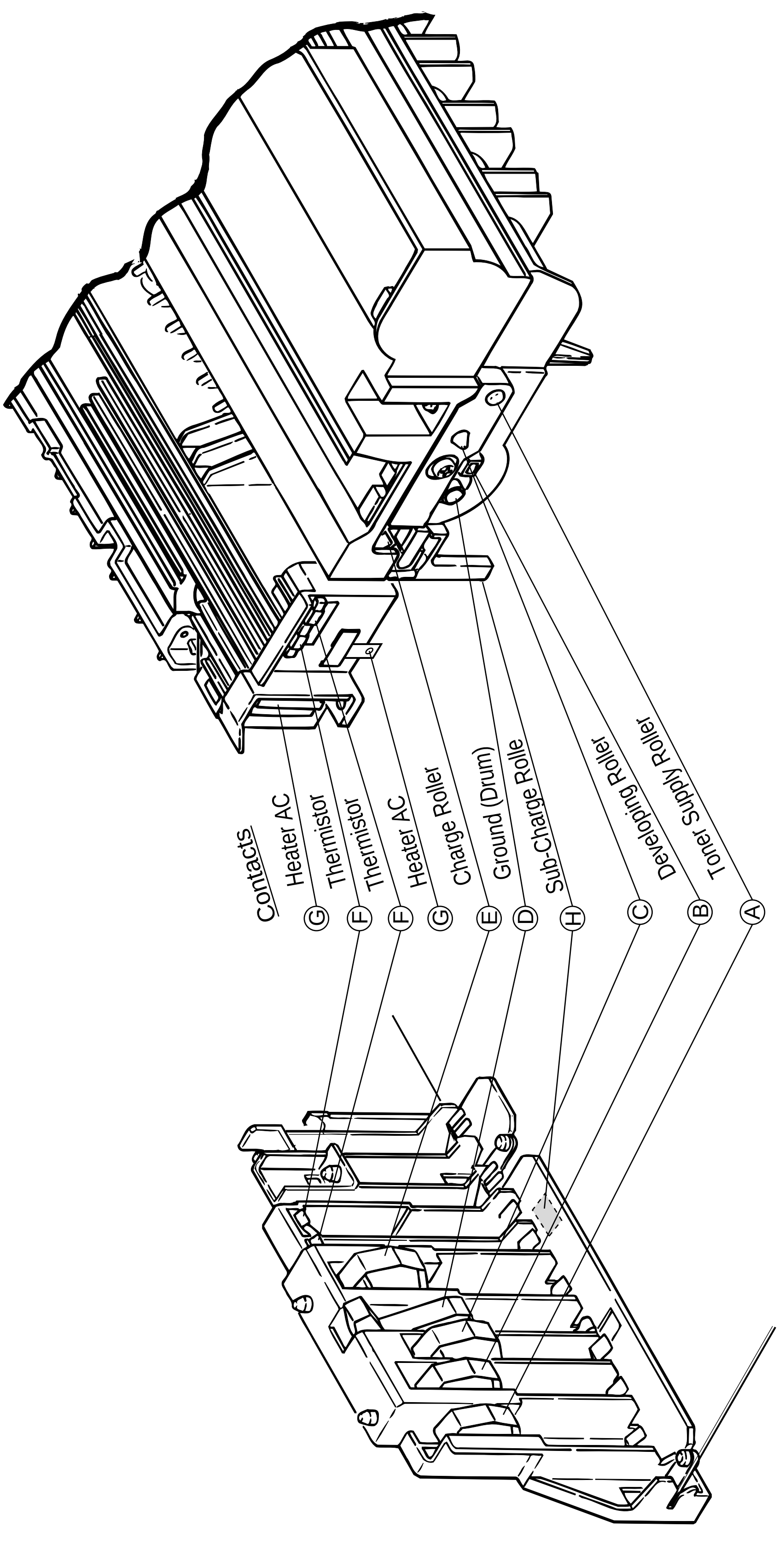

Contacts
G Heater AC
F Thermistor
F Thermistor
G Heater AC
E Charge Roller
D Ground (Drum)
H Sub-Charge Rolle
C Developing Roller
B Toner Supply Roller
A

Figure 6-4

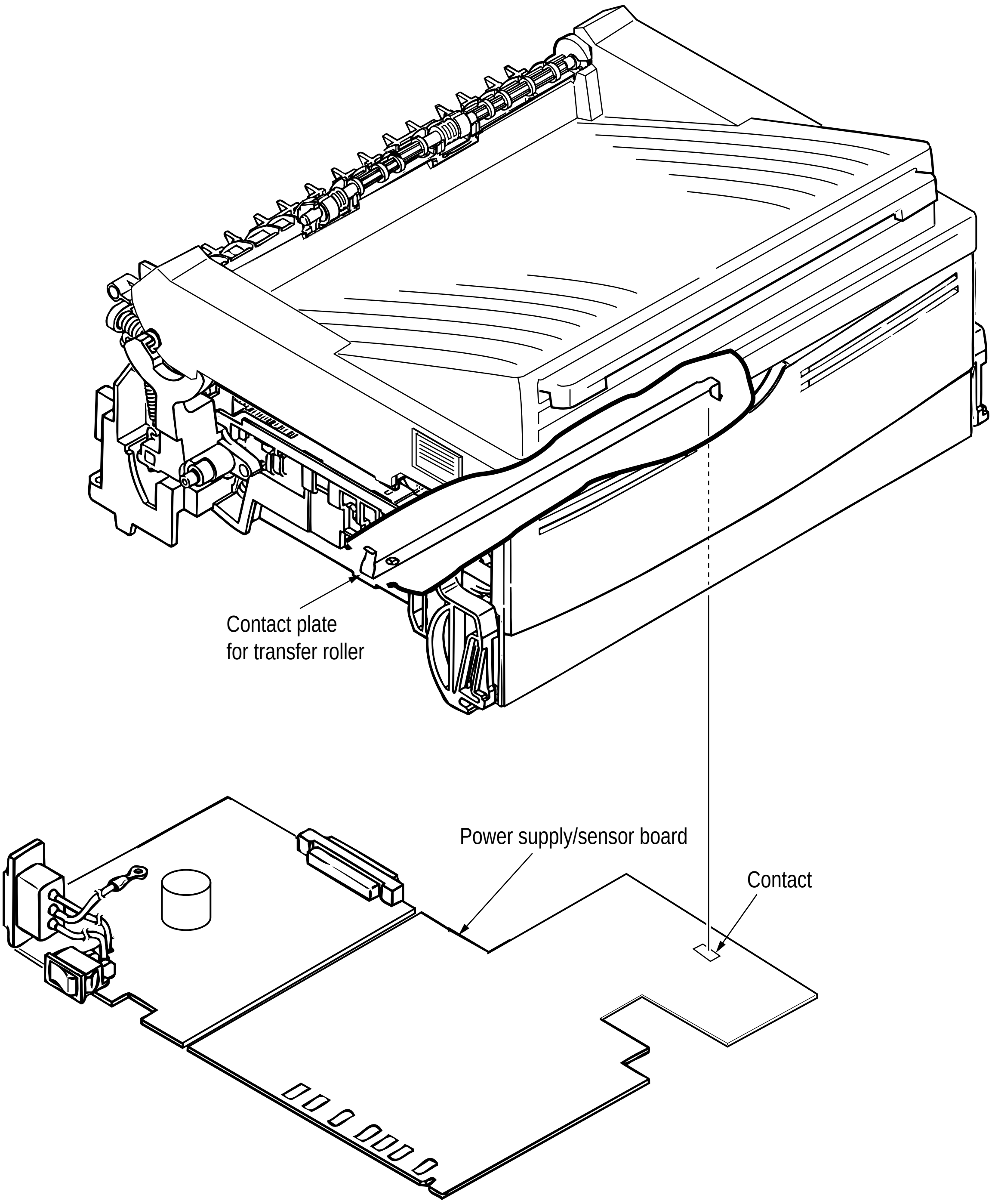
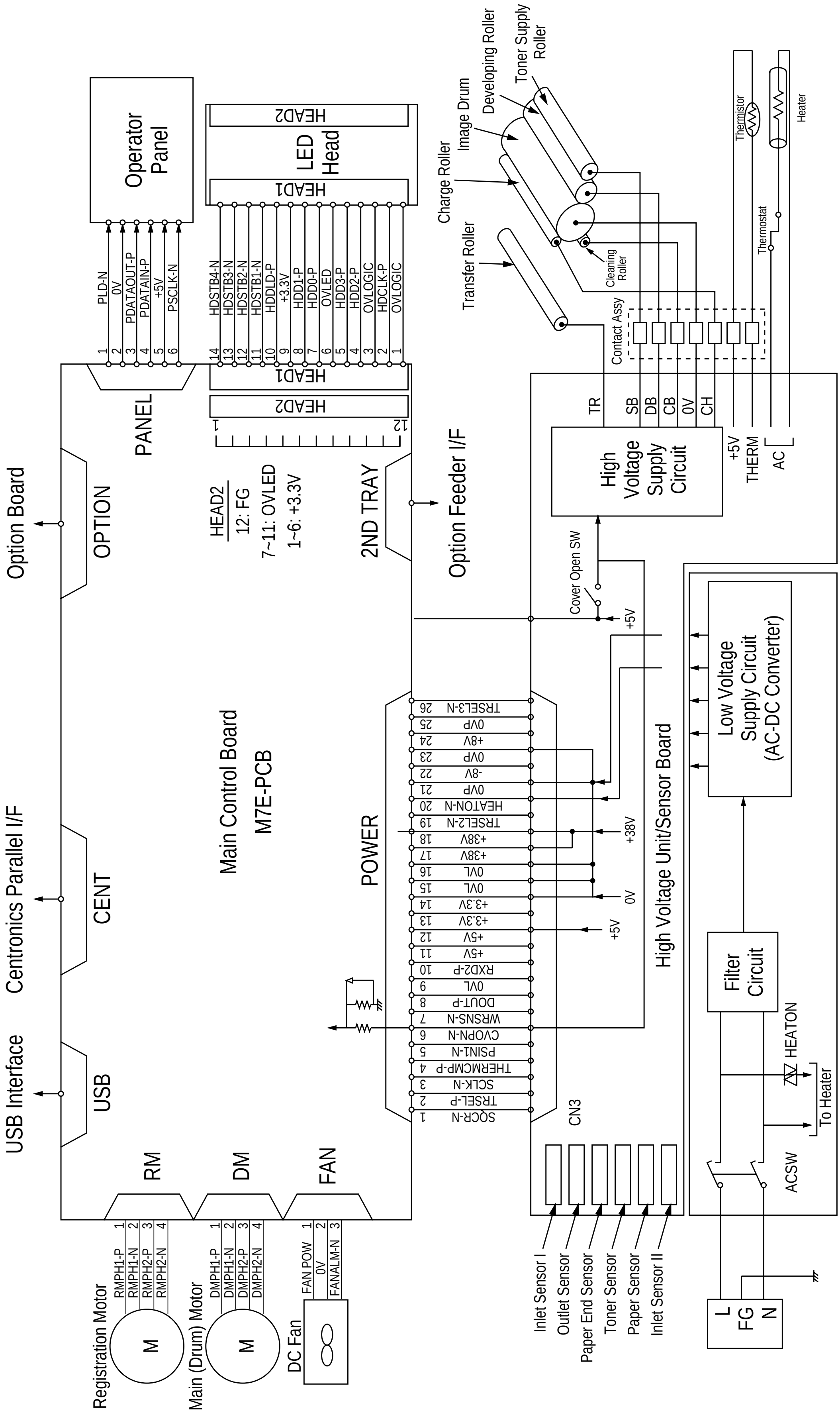

Contact plate
for transfer roller
Power supply/sensor board
Contact

Figure 6-5

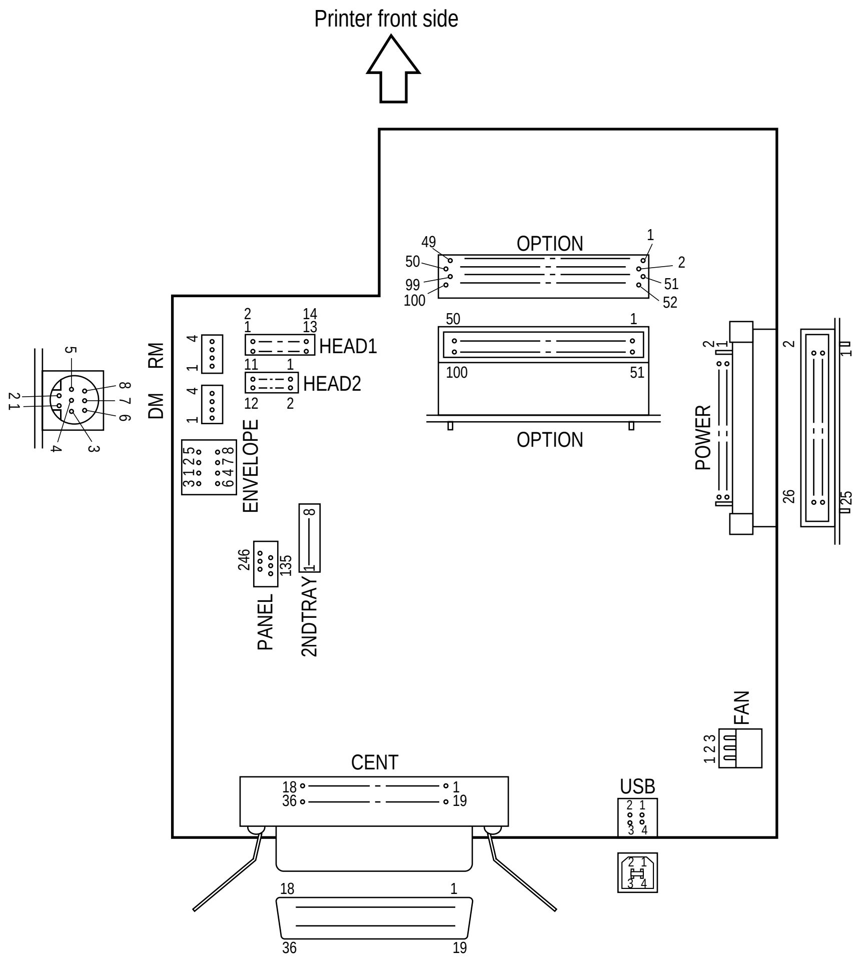
7. WIRING DIAGRAM

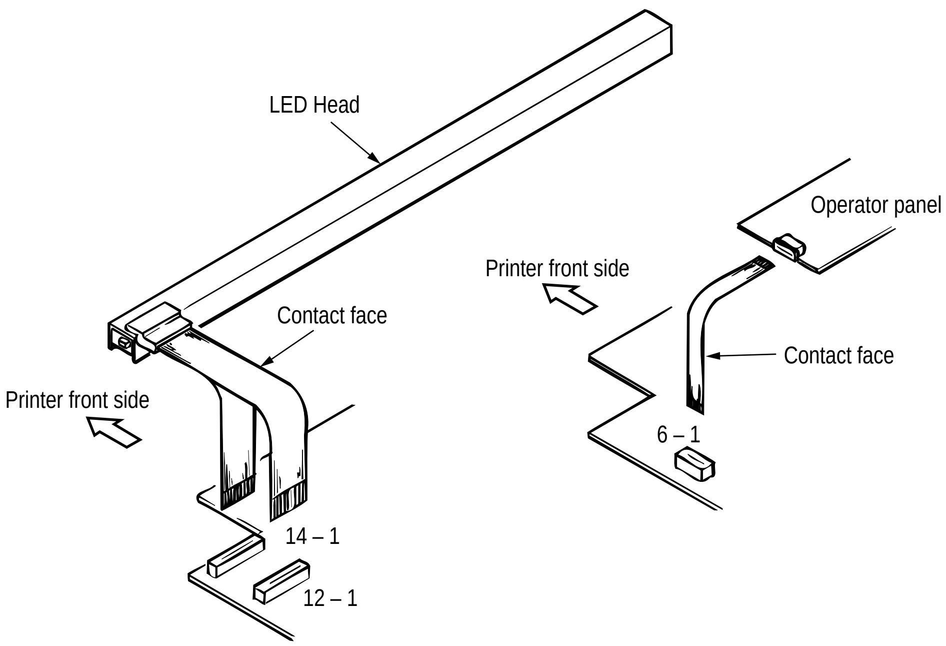
7.1 Interconnect Signal Diagram



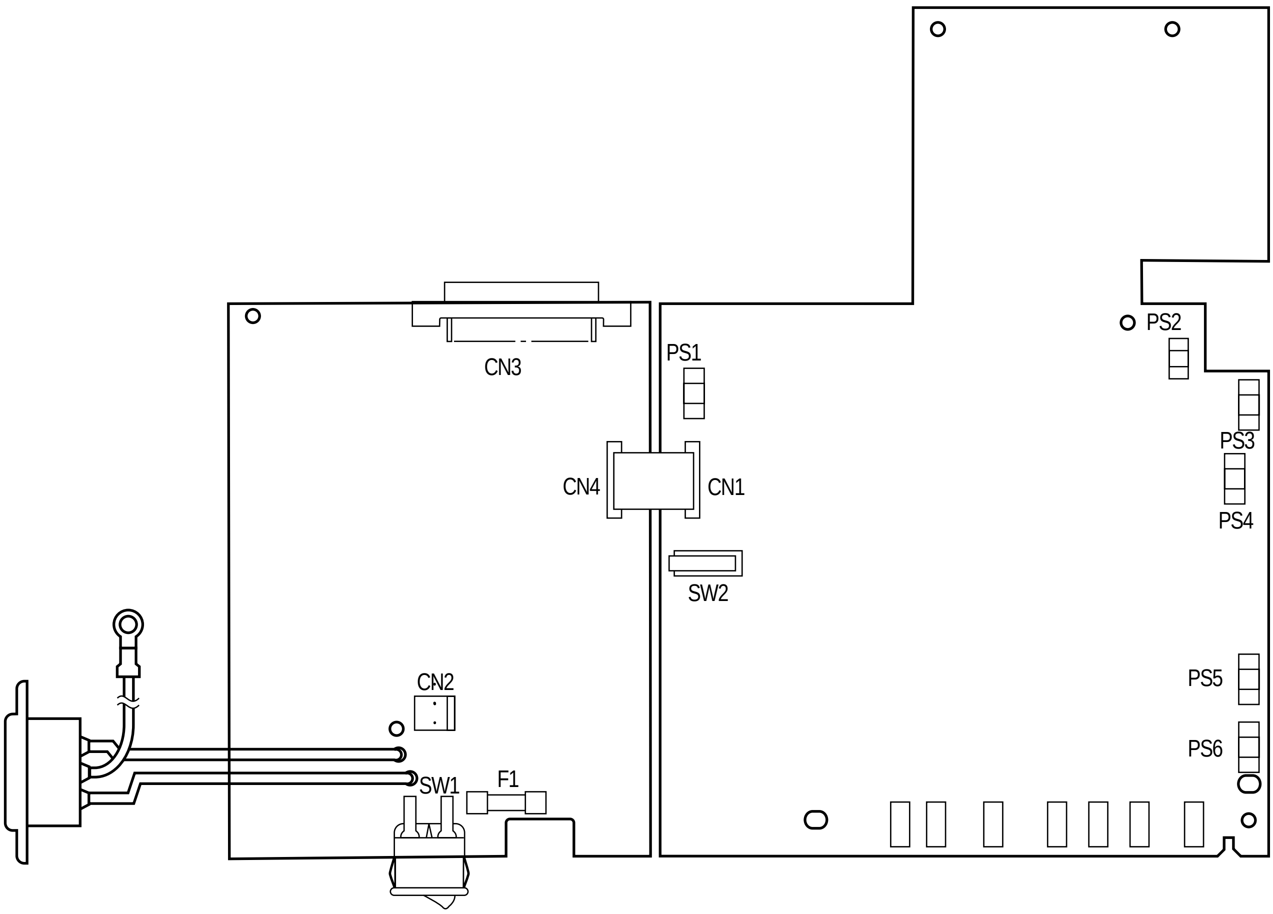
7.2 PCB Layout and Connector Signal List

(1) Main Control Board (M7E-PCB)





(2) Power Supply/Sensor Board



- FAN Connector Pin Assignment
  (To fan motor)

	PIN NO.	I/O*	Signal	Description
1	1	O	FANPOW	Power supply for fan driving
Opening 2	2	C	OV	Ground
3	3	I	FANALM-N	Fan alarm

- DM Connector Pin Assignment
  (To main/drum motor)

	PIN NO.	I/O*	Signal	Description
1	1	O	DMPH1-P	Coil 1-N
2	2	O	DMPH1-N	Coil 1-P
3	3	O	DMPH2-P	Coil 2-N
4	4	O	DMPH2-N	Coil 2-P

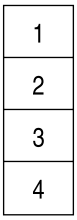
Excitation sequence

PIN NO.	Line Color	Step No.			
		1	2	3	4
2	Yellow	+	-	-	+
4	Black	+	+	-	-
1	Orange	-	+	+	-
3	Brown	-	-	+	+

Rotary direction Clockwise wiewed from the output axis.

* I: In
O: Out
C: Common

- RM Connector Pin Assignment
  (To registration motor)



PIN NO.	I/O*	Signal	Description
1	O	RMPH1-P	Coil 1-N
2	O	RMPH1-N	Coil 1-P
3	O	RMPH2-P	Coil 2-P
4	O	RMPH2-N	Coil 2-N

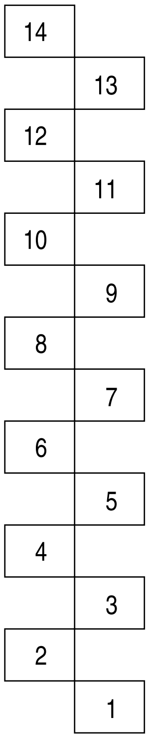
* I: In
O: Out

Excitation sequence

PIN NO.	Line Color	Step No.			
		1	2	3	4
2	Yellow	+	-	-	+
4	Black	+	+	-	-
1	Orange	-	+	+	-
3	Brown	-	-	+	+

Rotary direction Clockwise wiewed from the output axis.

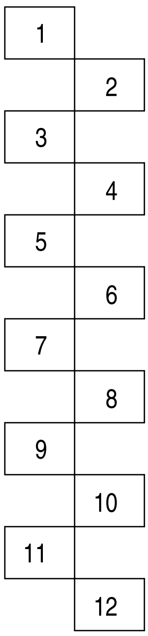
- HEAD1 Connector Pin Assignment
  (To LED head)



PIN NO.	I/O*	Signal	Description
14	O	HDSTB4-N	Strobe 4
13	O	HDSTB3-N	Strobe3
12	O	HDSTB2-N	Strobe 2
11	O	HDSTB1-N	Strobe 1
10	O	HDDLD-P	Load
9	O	+3.3V	+3.3V power supply for LED driving
8	O	HDD1-P	Data 1
7	O	HDD0-P	Data 0
6	C	OVLED	Ground for LED
5	O	HDD3-P	Data 3
4	O	HDD2-P	Data 4
3	C	OVLOGIC	Ground for logic
2	O	HDCLK-P	Clock
1	C	OVLOGIC	Ground for logic

* O: Out
C: Common

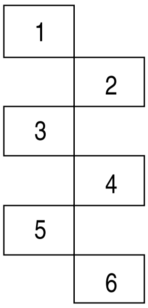
- HEAD2 Connector Pin Assignment
  (To LED head)



PIN NO.	I/O*	Signal	Description
1	O	+3.3V	+3.3V power supply for LED driving
2	O		
3	O		
4	O		
5	O		
6	O		
7	C	OVLED	Ground for LED
8	C		
9	C		
10	C		
11	C		
12	C	FG	FG

* O: Out
C: Common

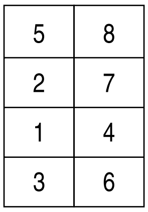
- PANEL Connector Pin Assignment
  (To operator panel)



PIN NO.	I/O*	Signal	Description
1	O	PLD-N	Load
2	C	OV	Logic groud
3	O	PDATAOUT-P	Data output
4	I	PDATAIN-P	Data input
5	C	5V	+5V power supply
6	O	PSCLK-N	Clock

* I: In
O: Out
C: Common

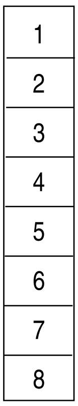
- ENVELOPE Connector Pin Assignment
  (To option feeder I/F)



PIN NO.	I/O*	Signal	Description
1	O	PAPERIN-N	Paper sense 1
2	O	OPTSCLK-N	Clock
3	O	DATA-N	Data
4	I	PAPERIN-N	OPT send data ready
5	C	OVP	Analog groud
6	O	38V	+30V power supply
7	C	0V	Logic gound
8	O	5V	+5V power supply

* I: In
O: Out
C: Common

- 2ND TRAY Connector Pin Assignment
  (To option tray I/F)



PIN NO.	I/O*	Signal	Description
1	O	PAPERIN-N	Paper sense 1
2	O	OPTSCLK-N	Clock
3	O	DATA-N	Data
4	I	PAPERIN-N	OPT send data ready
5	C	OVP	Analog groud
6	O	38V	+30V power supply
7	C	0V	Logic gound
8	O	5V	+5V power supply

* I: In
O: Out
C: Common

- POWER Connector Pin Assignment
  (To power supply/sensor board)

2	1
4	3
6	5
8	7
10	9
12	11
14	13
16	15
18	17
20	19
22	21
24	23
26	25

Pin No.	I/O*	Signal	Description	Pin No.	I/O*	Signal	Description
2	O	TRSEL-P	TR control switch	1	I	SQCR-N	Sequence clear signal of serial I/F
4	I	THERMCMP-P	Heater temperature	3	I	SCLK-N	Clock signal of serial I/F
6	I	CVOPN-N	Cover open (+5V)	5	I	PSIN1-N	Paper sense
8	O	DOUT-P	Serial data output	7	I	WRSNS-N	Reading of paper edge
10	I	RXD2-P	Serial data input	9	C	OVL	Ground for logic
12	I	+5V	Logic circuit supply voltage	11	I	+5V	Logic circuit supply voltage
14	I	+3.3V	LED head supply voltage	13	I	+3.3V	LED head supply voltage
16	C	OVL	Logic ground	15	C	OVL	Logic ground
18	I	+38V	Motor and fan drive voltage and source voltage for high voltage supply	17	I	+38V	Motor and fan drive voltage and source voltage for high voltage supply
20	O	HEATON-N	Heater on	19	O	TRSEL2-N	TR control switch
22	I		NC	21	C	0VP	Analog
24	I	+12V	High voltage Supply	23	C	0VP	Analog
26	O	TRSEL3-N	TR control switch	25	C	0VP	Analog

* O : Out
I : In
C : Common

- CENT Connector Pin Assignment
  (To Centro parallel I/F)

1	19
2	20
3	21
4	22
5	23
6	24
7	25
8	26
9	27
10	28
11	29
12	30
13	31
14	32
15	33
16	34
17	35
18	36

Pin No.	I/O*	Signal	Description	Pin No.	I/O*	Signal	Description
1	I	STROBE-N	Strobe	19	C	SG	Ground
2	C	DATA1-P	Data bit 0	20	C	SG	Ground
3	C	DATA2-P	Data bit 1	21	C	SG	Ground
4	C	DATA3-P	Data bit 2	22	C	SG	Ground
5	C	DATA4-P	Data bit 3	23	C	SG	Ground
6	C	DATA5-P	Data bit 4	24	C	SG	Ground
7	C	DATA6-P	Data bit 5	25	C	SG	Ground
8	C	DATA7-P	Data bit 6	26	C	SG	Ground
9	C	DATA8-P	Data bit 7	27	C	SG	Ground
10	O	ACK-N	Acknowledge	28	C	SG	Ground
11	O	BUSY-P	Busy	29	C	SG	Ground
12	O	PE-P	paper end	30	C	SG	Ground
13	O	SEL-P	Select	31	I	IPRIME-N	Input prime
14	I	AUTOFEED-N	Auto feed	32	O	FAULT-N	Fault
15		NC	Not connected	33	C	SG	Ground
16	C	SG	Ground	34		NC	Not connected
17	C	FG		35	O	HILEVEL	Always kept high
18	O	P-LOGIC-H	+5V power supply	36	I	SELIN-N	Select in

* O : Out
I : In
C : Common

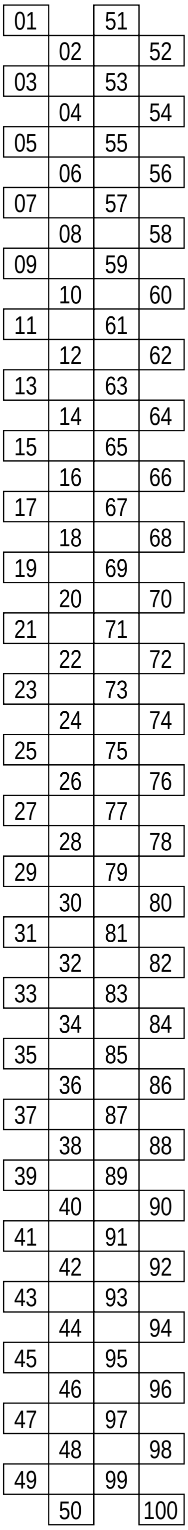
- USB Connector Pin Assignment
  (To USB I/F)

2	1
3	4

PIN NO.	I/O*	Signal	Description
1	I	Vcc	+5V Power
2	I/O	D-	USB Data
3	I/O	D+	USB Data
4	C	0V	Ground

* I: In
O: Out
C: Common

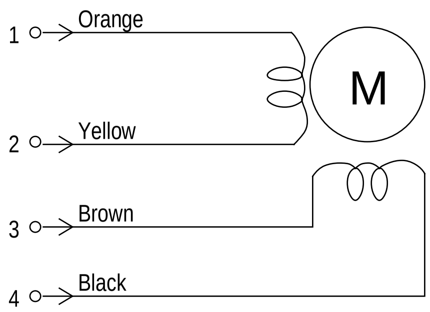
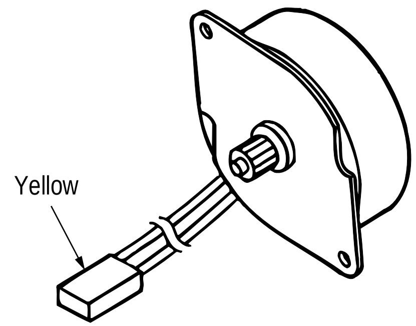
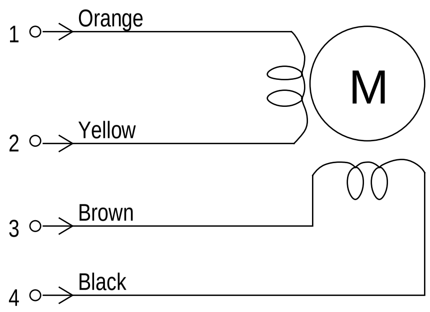
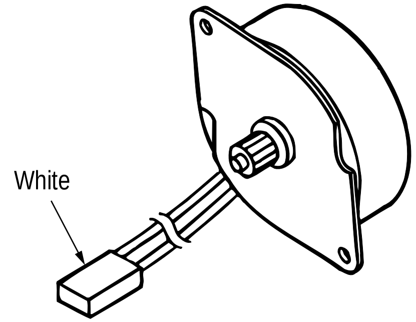
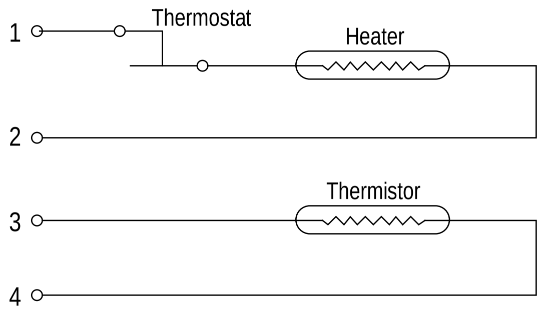
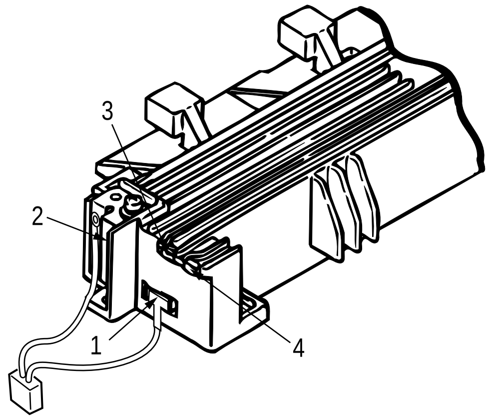
- OPTION Connector Pin Assignment
  (To option RAM or RS232C board)

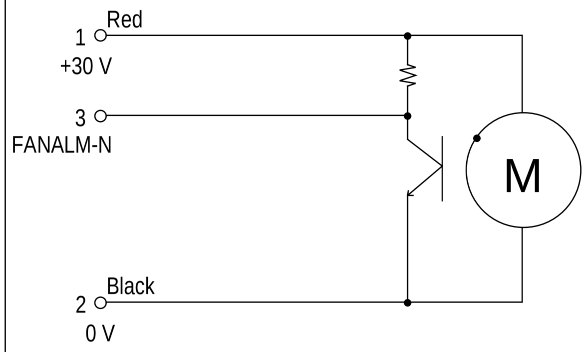
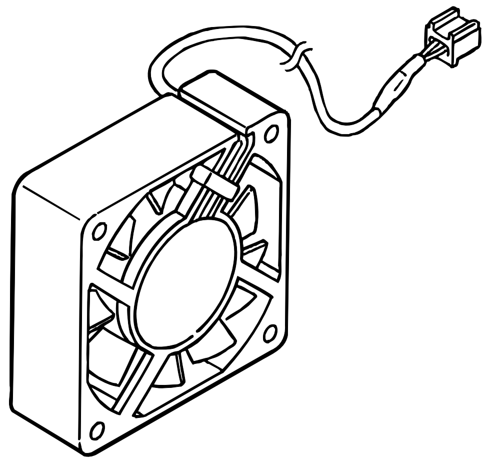


Pin No.	I/O*	Signal	Description	Pin No.	I/O*	Signal	Description
01	O	A0	OR write enable	51	I/O	D16	Data bit 16
02	C	0V	Logic ground	52	I/O	D0	Data bit 0
03	O	A1	Address bit 1	53	I/O	D17	Data bit 17
04	O	A2	Address bit 2	54	I/O	D1	Data bit 1
05	O	RSDTR0-N	RS232C Data terminal ready	58	I/O	D18	Data bit 18
06	O	A3	Address bit 3	56	I/O	D2	Data bit 2
07	O	A4	Address bit 4	57	I/O	D19	Data bit 19
08	C	0V	Logic ground	58	I/O	D3	Data bit 3
09	O	A5	Address bit 5	59	I/O	D20	Data bit 20
10	O	A6	Address bit 6	60	I/O	D4	Data bit 4
11	O	+5V	Logic power supply	61	I/O	D21	Data bit 21
12	O	A7	Address bit 7	62	I/O	D5	Data bit 5
13	O	A8	Address bit 8	63	I/O	D22	Data bit 22
14	C	0V	Logic ground	64	I/O	D6	Data bit 6
15	O	A9	Address bit 9	65	I/O	D23	Data bit 23
16	O	A10	Address bit 10	66	I/O	D7	Data bit 7
17	O	+5V	Logic power supply	67	I/O	D24	Data bit 24
18	O	A11	Address bit 11	68	I/O	D8	Data bit 8
19	O	A12	Address bit 12	69	I/O	D25	Data bit 25
20	C	0V	logic ground	70	I/O	D9	Data bit 9
21	O	A13	Address bit 13	71	I/O	D26	Data bit 26
22	O	A14	Address bit 14	72	I/O	D10	Data bit 10
23	O	+5V	Logic power supply	73	I/O	D27	Data bit 27
24	O	A15	Address bit 15	74	I/O	D11	Data bit 11
25	O	A16	address bit 16	75	I/O	D28	Data bit 28
26	C	0V	Logic ground	76	I/O	D12	Data bit 12
27	O	A17	Address bit 17	77	I/O	D29	Data bit 29
28	O	A18	Address bit 18	78	I/O	D13	Data bit 13
29	O	+5V	Logic power supply	79	I/O	D30	Data bit 30
30	O	A19	Address bit 19	80	I/O	D14	Data bit 14
31	O	A20	Address bit 20	81	I/O	D31	Data bit 31
32	C	0V	Logic ground	82	I/O	D15	Data bit 15
33	O	A21	Address bit 21	83	O	DRAS2-N	DRAM select 2
34	O	A22	Address bit 22	84	O	DRAS3-N	DRAM select 3
35	O	A23	Address bit 23	85	O	DRAS4-N	DRAM select 2
36	O	0V	Logic ground	86	O	DRAS5-N	DRAM select 5
37	O	0V	Logic ground	87	O	DCAS3-N	DCAS3
38	C	0V	Logic ground	88	O	DCAS2-N	DCAS2
39	O	RSRTS0-N	RS232C request to send	89	O	DCAS1-N	DCAS1
40	O	CS1-N	ROM/SRAM select 1	90	O	DCAS0-N	DCAS0
41	O	CS2-N	ROM/SRAM select 2	91	O	RD-N	RD-N
42	O	CS3-N	ROM/SRAM select 3	92	O	WR-N	WR-N
43	I	SCRREQ-P	SCC send request	93	I	INT1-N	Interrupt request 1
44	C	0V	Logic ground	94	I	INT2-N	Interrupt request 2
45	I	SCSREQ-P	SCC receive request	95	O	EEPRMCS1-P	EEPROM select
46	O	IOS0-N	I/O select 0	96	O	EEPRMCLK-P	EEPROM clock
47	O	IOS1-N	I/O select 1	97	C	SSTXD-P	EEPROM data
48	O	RSTXD0-N	RS232C send data	98	I	DRDY-N	Data read
49	O	-8V	RS232C line voltage	99	C	+8V	RS232C line voltage
50	I	RSRXD0-P	RS232C receive data	100	O	RESET-N	Reset signal

* O : Out
I : In
C : Common

7.3 Resistance Check

Unit	Circuit Diagram	Illustration	Resistance
Registration motor			Between Pins 1 and 2: 18.6Ω Between Pins 3 and 4: 18.6Ω
Main/drum motor			Between Pins 1 and 2: 4.2Ω Between Pins 3 and 4: 4.2Ω
Fusing unit			Between Pins 1 and 2: 120V 3Ω 240V 10Ω Between Pins 3 and 4: 220KΩ (at room temperature)

Unit	Circuit Diagram	Illustration	Resistance
Fan			

8. PARTS LIST

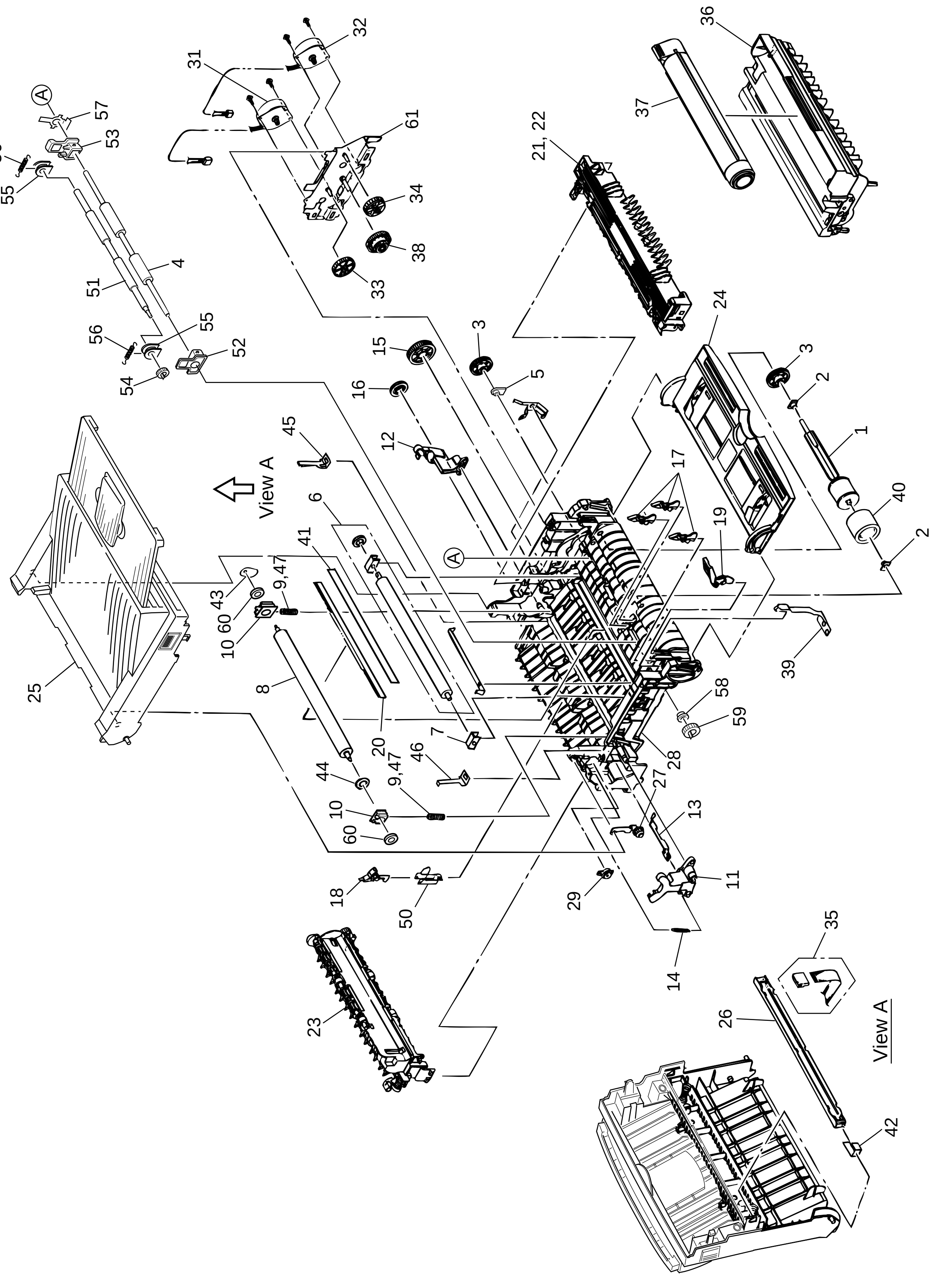


Figure 8-1 Lower Base Unit

Table 8-1 Lower Base Unit (1/2)

No.	Name/Rating	Part No.	Use	Remarks	ODA Part No.
1	Hopping roller shaft	3PP4083-6020P001	1		51112601
2	Bearing	4PP4083-6022P002	2		51607402
3	Hopping roller one-way clutch gear	4PB4083-6024P001	2		51228901
4	Roller registration	41281101	1		
5	Bearing (registration)	4PP4083-6031P001	1		51607501
6	Roller-Transfer Assy	40437802	1		
7	Bearing TR	40438001	1		
8	Roller Back-up	41301801	1		
9	Spring Bias	41584101	2		
10	Holder BU	41536201	2		
11	Reset lever L	40581801	1		50805801
12	Reset lever R	3PP4083-6054P001	1		50805901
13	Cover open switch arm	3PP4083-6058P001	1		53068901
14	Stacker cover reset spring	4PP4083-6057P001	1		50924201
15	Fuser roller idle gear	4PP4083-6080P001	1		51229101
16	Eject roller idle gear	4PP4083-6081P001	1		51229201
17	Sensor plate (inlet)	4PP4083-6083P001	3		51010701
18	Lever eject sensor Assembly	40771401	1		
19	Toner sensor (adhesion)	4PP4083-6086G001	1		50405501
20	Diselectrification bar	4PB4083-6979P001	1		
21	Heat Assy - OP14i	40470107	1	120V	
22	Heat Assy - OP14i	40470108	1	230V	
23	Roller assy - Eject	40772501	1		
24	Manual feed guide assy	40715501	1		
25	Stacker-Assy	41423101	1		
26	LED head unit - 51LS	41366001	1		
27	Stacker cover damper arm	4PP4083-6191G001	1		53069101
28	Frame subassy	41453901	1		
29	Stacker cover damper	4PB4083-6197P001	1		51229401
30					
31	Motor-Pulse (main)	41301901	1		
32	Motor-Pulse (regist)	40722301	1		
33	Gear-Idle A (Z60/20)	41279001	1		
34	Gear-Idle B (Z45/16)	41279101	1		
35	Cord-LED Assembly	40241702	1		
36	Image drum unit	41331601	1	ODA	
	Image drum unit	41331602	1	OEL	
	Image drum unit	41331603	1	APS	
37	Toner Cartridge	40433203	1	APS(2.5k)	
	Toner Cartridge (Type 8)	41331701	1	ODA(4k)	
	Toner Cartridge (Type 8)	41331702	1	OEL(4k)	
	Toner Cartridge (Type 8)	41331703	1	APS(4k)	

Table 8-1 Lower Base Unit (2/2)

No.	Name/Rating	Part No.	Use	Remarks	ODA Part No.
38	Gear-Reduction	41279201	1		
39	FG plate (O.P.)	4PP4083-7663P001	1		
40	Hopping roller rubber	4PB4076-5447P001	1		
41	Diselectritication Film	3PB4083-6089P001	1		
42	LED Contact	4PP4083-6173P001	1		
43	Washer C	4PP4120-1210P001	1		
44	Washer B	4PP4120-1209P001	1		
45	Spacer-Bearing R	41583901	1		
46	Spacer-Bearing L	41584001	1		
47	Bias spring A	41599601	2	Special parts for envelope *	
48					
49					
50	Sensor wire Assembly	41027701	1		
51	Roller-Pressure	41281001	1		
52	Holder-Regist L	41279501	1		
53	Holder-Regist R	41279601	1		
54	Gear-Pressure	41279801	1		
55	Bearing-Pressure	41279401	2		
56	Spring-Tension	41281201	2		
57	Plate-Contact PA	41280401	1		
58	Bearing-Regist L	41279301	1		
59	Gear-Regist	41279701	1		
60	Bearing-Ball	41584201	2		
61	Bracket-Motor	41280001	1		

* This part is countermesur for envelope wrinkle.
Both side springs must be exchanged at the same time.

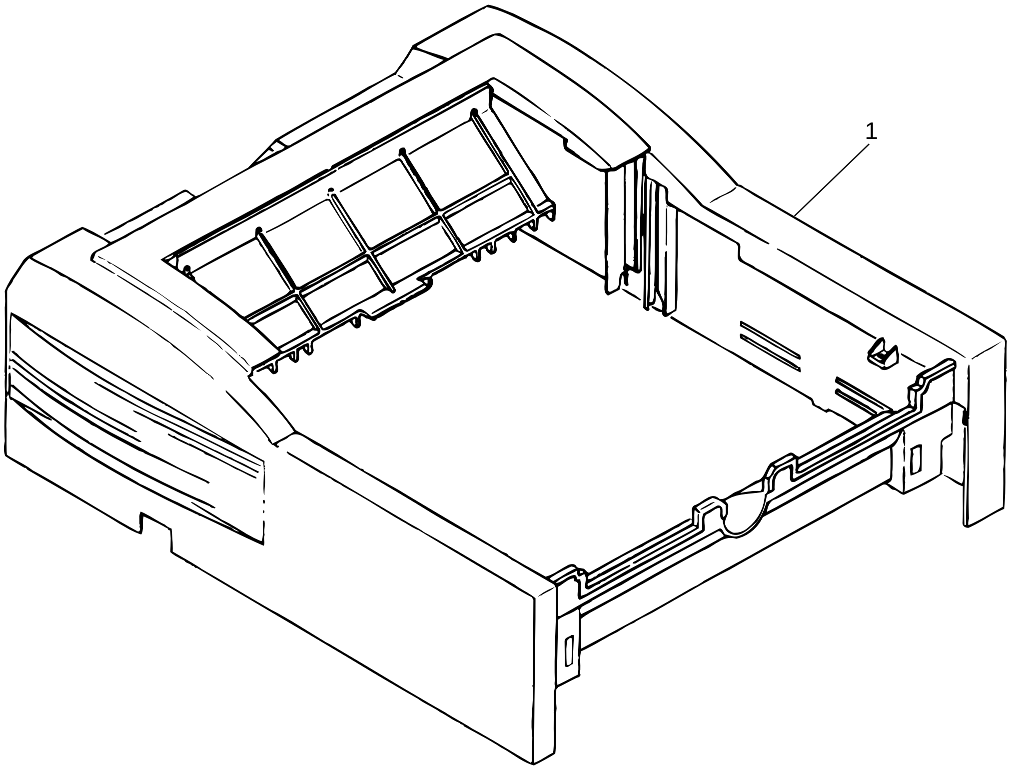


Figure 8-2 Upper cover unit

Table 8-2 Upper cover unit

No.	Name/Rating	Part No.	Use	Remarks	ODA Part No.
1	Cover-Upper	40715101	1		

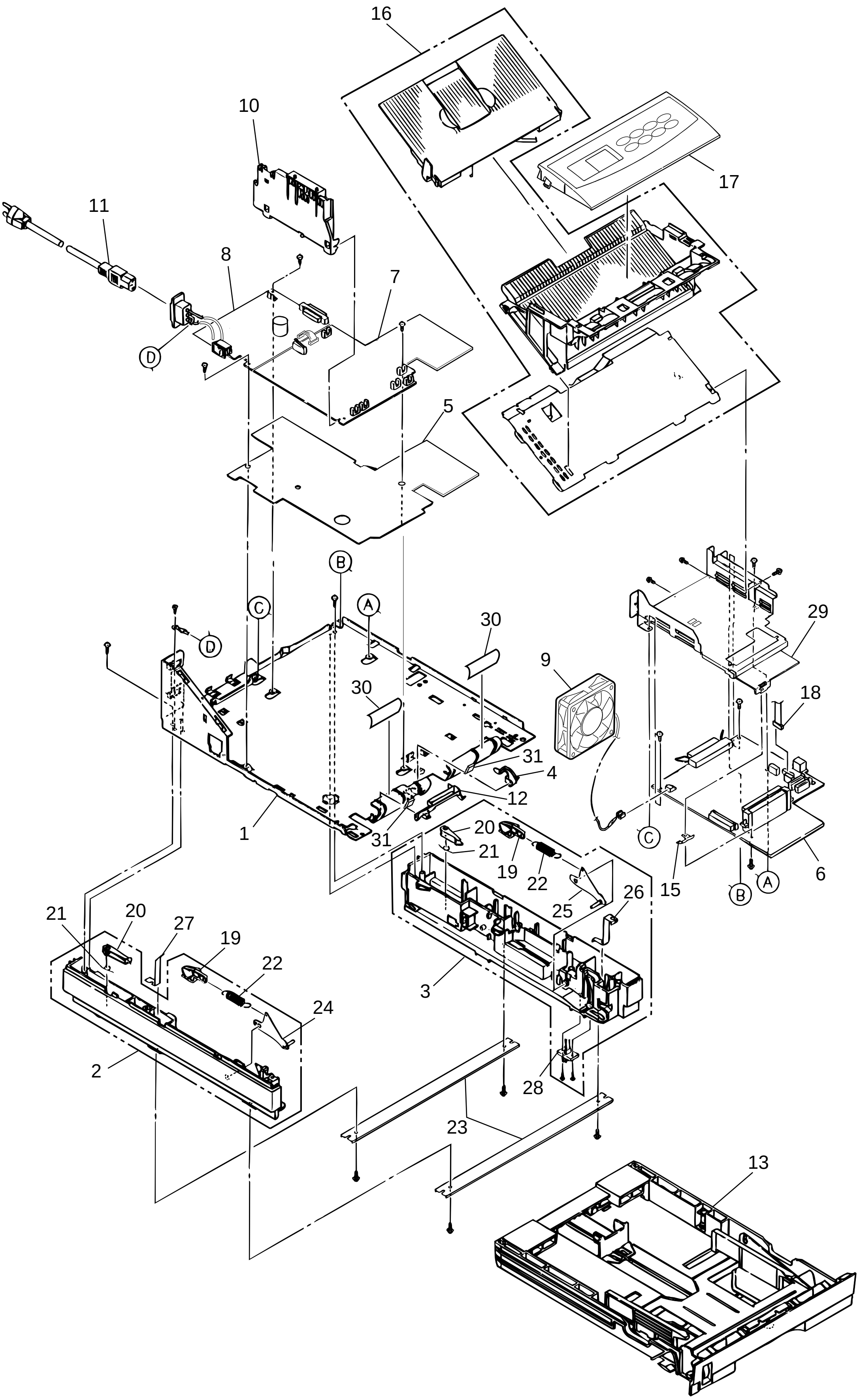


Figure 8-3 Base unit

Table 8-3 Base unit

No.	Name/Rating	Part No.	Use	Remarks	ODA Part No.
1	Plate base	41279901	1		
2	Cassette guide (L) assy	3PP4083-7670G001	1		51011201
3	Cassette guide (R) assy	3PP4083-7671G001	1		51011301
4	Sensor plate (paper supply)	4PP4083-7667P001	1		51011401
5	Plate-Insulator	41301601	1		
6	Board-M7E	41249206	1		
7	PCB Assy-HV1	41228501	1		
8	Power supply Unit	41087901	1	120V	
	Power supply Unit	41088001	1	230V	
9	Fan motor	41454401	1		
10	Contact assy	41445801	1		
11	AC cord	3YS4011-1315P001	1	120V	51011501
	AC cord	3YS4011-1266P001	1	220~240V	
12	Cassette sensor plate	3PP4083-6154P001	1		
13	Cassette Assy-Paper	40473001	1		
14					
15	Earth plate	4PP4083-6137P001	1		51011601
16	Face up stacker cover assy	2PA4128-1143G001	1		51011301
17	Frame Assy-OP Panel	40715207	1	ODA/OEL/INT	
18	Cord assy /OP	41445901	1	120V	
19	Link pull block	4PP4122-1170P001	2		
20	Cassette lock lever	3PP4083-7653P001	2		
21	Cassette lock lever spring	4PP4083-7655P001	2		
22	Sheet spring	4PP4083-7666P001	2		
23	Beam	3PP4083-7660P001	2		
24	Sheet link L assy	4PP4083-7657G001	1		
25	Sheet link R assy	4PP4083-7658G001	1		
26	FG plate (2nd)	4PP4083-7662P001	1		
27	FG plate (bm)	4PP4083-7665P001	1		
28	Connector cord	3YS4111-3527P001	1		
29	Plate Guide-PCB	41301701	1		
30	Polyethylene Tape	4YC4061-5115P001	2	L=91.5mm	
31	Guide-Paper H	40828301	2		
32	CS-RING(CS3-SUS)	4PB4013-3501P002	2		
33	Board-MN6	40755408	1	APS	
	Board-MN8	41047304	1	APS	

Appendix A RS-232C SERIAL INTERFACE (option)

1) Connector

- Printer side : 25-pin receptacle
  Type DB-25S (made by Canon) or equivalent
- Cable side : 25-pin plug
  Type DB-25S (made by Canon)
  Shell
  Type DB-C8-J10-F2-1 (made by Nihon Kouku Denshi) or equivalent

Note: Plug shall be fixable with a lock screw.

2) Cable

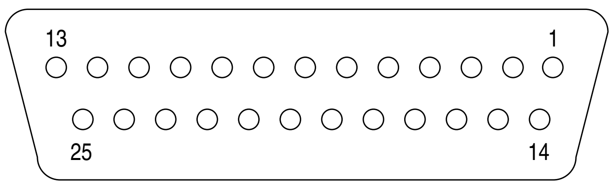
- Cable length : 6 ft (1.8 m) max. (cable shall be shielded)

Note: Cable is not provided.

3) Interface signal

Pin No.	Signal name	Abbreviation	Signal direction	Functions
1	Frame Ground	FG		Frame Ground
2	Transmitted Data	TD	← PR	Transmitted Data
3	Received Data	RD	→ PR	Received Data
4	Request to Send	RTS	← PR	Stay space level
5	-			(Not connected)
6	-			(Not connected)
7	Signal Ground	SG		Signal Ground
9 ~ 17	-			(Not connected)
18	-			(Not connected)
19	-			(Not connected)
20	Data Terminal Ready	DTR	← PR	Data terminal ready
21 ~ 25	-			(Not connected)

- Connector pin arrangement



(View from the cable side)

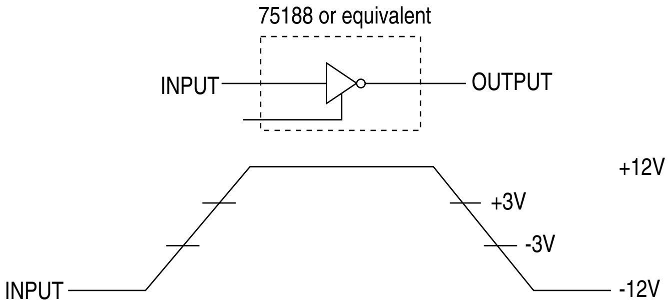
When the Ready/Busy protocol is used for the buffer busy control method, the busy signal can be set to Pin-20 (DTR) in the menu.

4) Signal Level

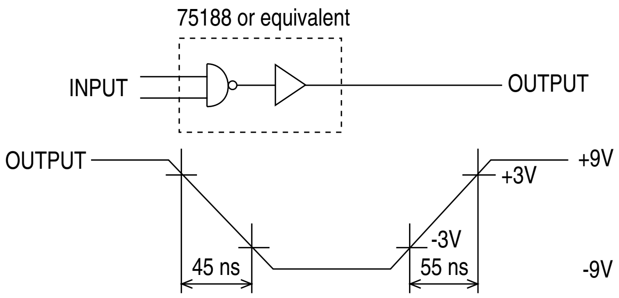
- MARK polarity : -3V to -15V (LOGIC = 1)
- SPACE polarity : +3V to +15V (LOGIC = 0)

5) Interface Circuit

a) Receiving Circuit



b) Sending Circuit



Note: The signal levels described above is for the case where 3K Ω x 15pF is connected to the terminal.

6) Receive Margin

37% min. at all reception rates.

7) Communications Protocol

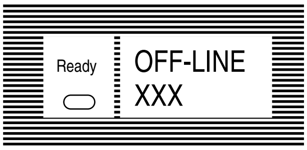
a) READY/BUSY protocol
b) X-ON/X-OFF protocol

8) Interface Parameter Setting

The following settings are possible by pressing the ENTER key, after selecting the display contents of the LCD of the operator panel by using the ◀ and ▶ keys.

Settings are retained even when the printer power is turned off.

By pressing the ON LINE key, menu setting mode is completed and the printer returns to on-line state.



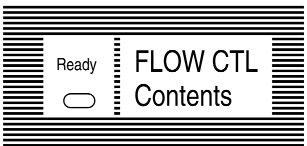
XXX : PCL, AUTO, HEX DUMP, PRR or FX

Keep the MENU key down for more than 2 seconds and bring the printer into menu setting mode (level 2). Next, press the MENU key 10 times.



"RS232C SERIAL" is displayed on the LCD.

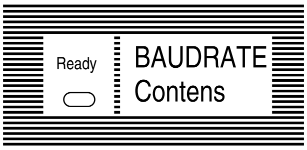
Press the ENTER key.



Item	Flow CTL
Contents of Display	Function
DTR HI	SPACE-READY
DTR LO	MARK-READY
XONXOFF	
RBSTXON	Sending at intervals of 1 sec.

Factory Setting: DTR HI

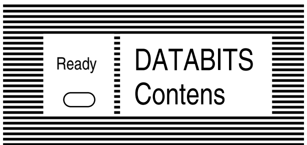
Press the MENU key.



Item	Baud Rate
Contents of Display	Function
300	300 baud
600	600 baud
1200	1200 baud
2400	2400 baud
4800	4800 baud
9600	9600 baud
19200	19200 baud

Factory Setting: 9600 baud

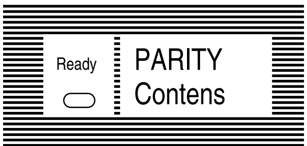
Press the MENU key.



Item	Bit Length
Contents of Display	Function
8 BITS	8 bits
7 BITS	7 bits

Factory Setting: 8 bit

Press the MENU key.



Item	Parity
Contents of Display	Function
NONE	No parity
EVEN	Even parity
ODD	Odd parity

Factory Setting: NONE

Press the MENU key.

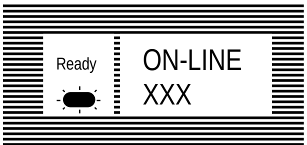


Item	Minimum BUSY Time
Contents of Display	Function
200 m SEC	200 ms
1 SEC	1 sec (1000 ms)

Factory Setting: 200 m SEC

(PCL only)

Press the ON LINE key.



Setting completed.

XXX : PCL, AUTO, HEX DUMP, PRR or FX

Appendix B CENTRONICS PARALLEL INTERFACE

1) Connector

- Printer side : 36-pin receptacle
  (single port) Type 57RE-40360-730B-D29A (made by Daiichi Denshi), CN-AX05841A36AT (made by Ougat) or equivalent
- Cable side : 36-pin plug
  Type 57-30360 (made by Daiichi Denshi) or equivalent
  Plug-552274-1 (AMP), 552073-1 (AMP) or equivalent

2) Cable

- Cable length : 6 ft (1.8 m) max.

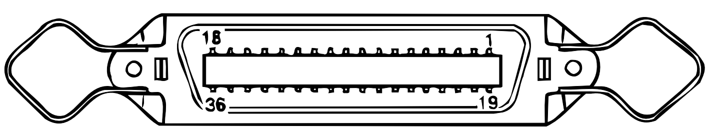
(A Shielded cable composed of twisted pair wires is recommended for noise prevention.)

Note: Cable is not supplied with the printer, and is not available from Oki.

3) Table of Parallel I/F Signals

Pin No.	Signal name	Signal direction	Functions
1	$\overline{\text{DATA STROBE}}$	→ PR	Parallel data sampling strobe
2	DATA BIT - 1		
3	DATA BIT - 2		
4	DATA BIT - 3		
5	DATA BIT - 4	→ PR	PR Parallel input and output data
6	DATA BIT - 5		
7	DATA BIT - 6		
8	DATA BIT - 7		
9	DATA BIT - 8		
10	$\overline{\text{ACKNOWLEDGE}}$	← PR	Completion of data input or end of a function
11	BUSY	← PR	During print processing or alarm
12	PAPER END	← PR	End of paper
13	SELECT	← PR	Select state (ON-LINE)
14	$\overline{\text{AUTOFEED}}$	→ PR	Request to change mode
15	-		(Not used)
16	0V		Signal ground
17	CHASSIS GROUND		Chassis ground
18	+5V	← PR	50 mA max.
19 : 30	0V		Signal ground
31	$\overline{\text{INPUT PRIME}}$	→ PR	Initializing signal
32	$\overline{\text{FAULT}}$	← PR	End of paper or during alarm
33	-		Signal ground
34	-		(Not used)
35	-		High level (3.3 kΩ)
36	$\overline{\text{SELECT IN}}$	→ PR	Request to change mode

• Connector pin arrangement



4) Signal Level

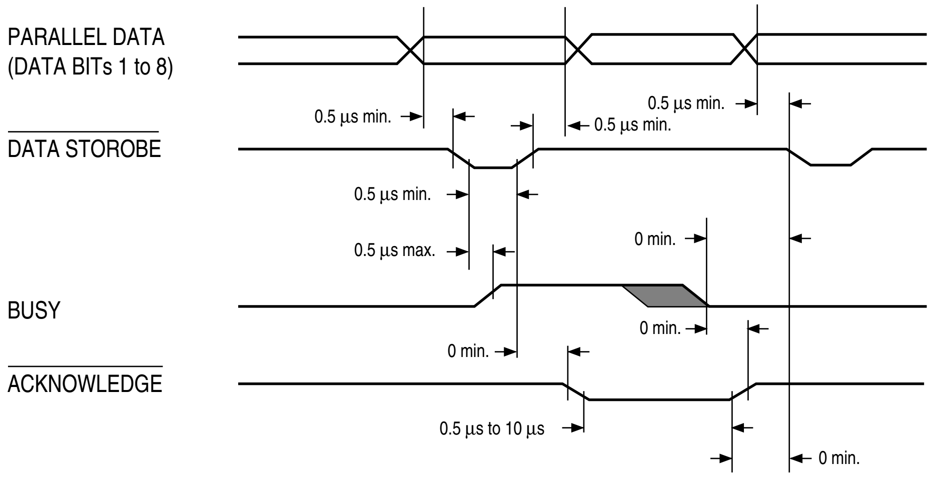
- LOW : 0 V to +0.8 V
- HIGH : +2.4 V to 5.0 V

5) Specifications

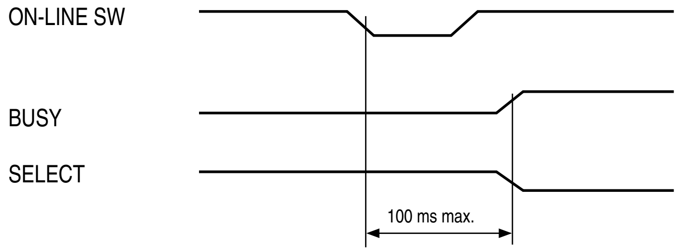
Item	Description
Mode	Compatibility mode, Nibble mode, ECP mode
Data bit length	8 bits (in the compatibility mode)
Input prime	Valid/Invalid
Receive buffer	8K, 20K, 50K, 100K, 1M Bytes
Control	Handshaking control is performed in each mode. Data received from the host is stored in the receive buffer. Busy control is performed. Signal lead control is performed.

6) Timing Charts

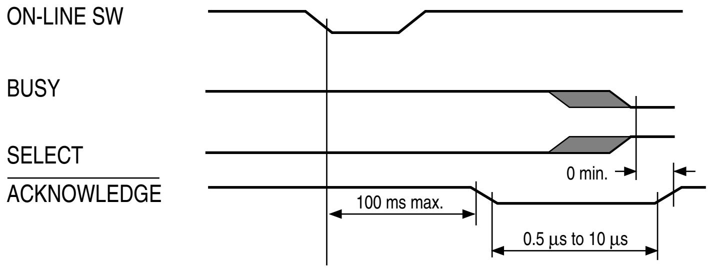
a) Data receiving timing



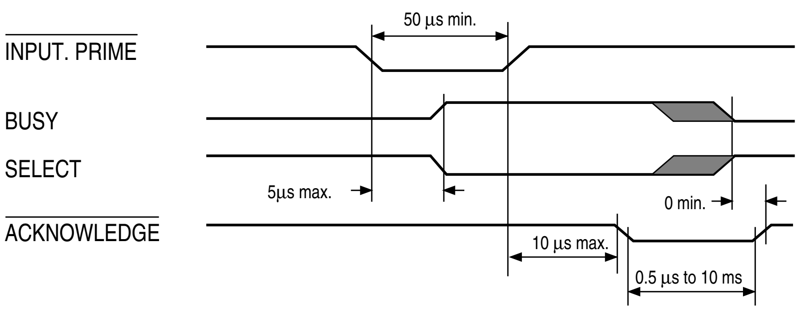
b) On-line → off-line switching timing by ON-LINE SW



c) Off-line → on-line switching timing by ON-LINE SW



d) INPUT PRIME timing (when set to the effective INPUT PRIME signal)

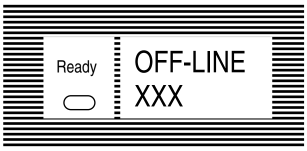


7) Interface Parameter Setting

The following settings are possible by pressing the ENTER key, after selecting the display contents of the LCD of the operator panel by using the ◀ and ▶ keys.

Settings are retained even when the printer power is turned off.

By pressing the ON LINE key, menu setting mode is completed and the printer returns to on-line state.

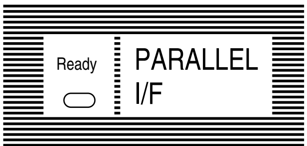


XXX : PCL, AUTO, HEX DUMP, PRR or FX

↓

Keep the MENU key down for more than 2 seconds and bring the printer into menu setting mode (level 2). Next, press the MENU key 9 times.

↓

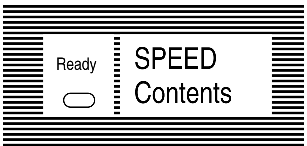


"PARALLEL I/F" is displayed on the LCD.

↓

Press the ENTER key.

↓

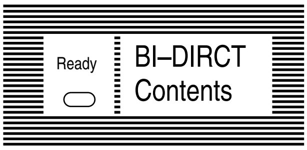


Item	Data Transfer Speed
Contents of Display	Function
HIGH	High speed
MEDIUM	Normal speed

Factory Setting: HIGH

↓

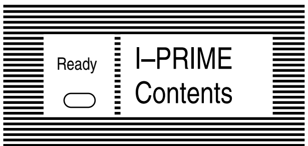
Press the MENU key.



Item	Direction of Data Transfer
Contents of Display	Function
ENABLE	Bi-directional data transmission
DISABLE	Uni-directional data transmission

Factory Setting: ENABLE

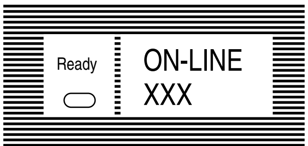
Press the MENU key.



Item	I-PRIME
Contents of Display	Function
OFF	I-PRIME signal ignored
ON	I-PRIME signal effective

Factory Setting: OFF

Press the ON LINE key.



Setting completed.

XXX : PCL, AUTO, HEX DUMP, PRR or FX

Appendix C Universal Serial Bus (USB)

Universal Serial Bus Specification Revision 1.1 compliance.

1) Connector

- Printer Side : "B" Receptacle (Upstream Input to the USB Device)
- Cable Side : Series "B" Plug

2) Cable

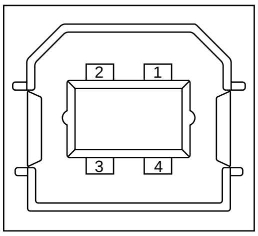
- Cable Length : Max 5m (A cable must be met USB Spec Rev 1.1 for normal operation)

Note: Cable is not provided.

3) Table of USB I / F signals

Contact Number	Signal Name
1	Vbus
2	D -
3	D +
4	GND
Shell	Shield

4) Connector pin arrangement



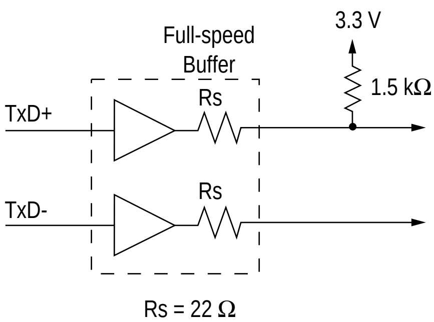
5) Mode & Class of Device

- Full - speed Driver
- Self - powered Device

6) Data Signaling Rate

- Full - speed function - 12Mb/s

7) Interface circuit



8) Signal Level

- Input / Output Level

Parameter	Symbol	Min.	Max.	Units
Input Levels :				
High (driven)	V_{IH}	2.0		V
High (floating)	V_{IHZ}	2.7	3.6	V
Low	V_{IL}		0.8	V
Output Levels :				
Low	OL	0.0	0.3	V
High (driven)	OH	2.8	3.6	V
Output Signal Crossover Voltage	V_{CRS}	1.3	2.0	V

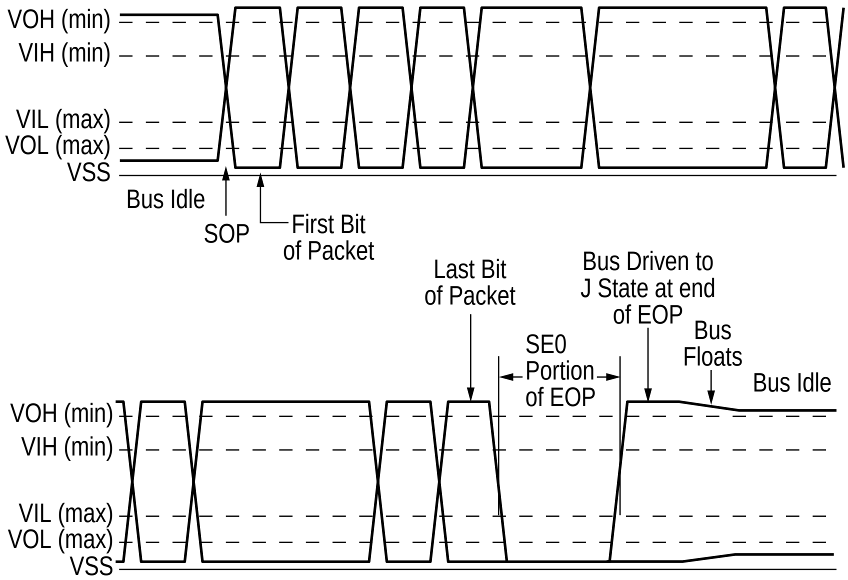
- Signaling Levels

Bus State	Signaling Levels	
	Required	Acceptable
Differential "1"	(D+) - (D-) > 200mV and D+ > V_{IH} (min)	(D+) - (D-) > 200mV
Differential "0"	(D-) - (D+) > 200mV and D- > V_{IH} (min)	(D-) - (D+) > 200mV
Single-ended 0 (SE0)	D+ and D- < V_{IL} (max)	D+ and D- < V_{IH} (min)
Data J state: Low-speed Full-speed	 Differential "0" Differential "1"	
Data K state: Low-speed Full-speed	 Differential "1" Differential "0"	
Idle state: Low-speed Full-speed	 D- > V_{IHZ} (min) and D+ < V_{IL} (max) D+ > V_{IHZ} (min) and D- < V_{IL} (max)	 D- > V_{IHZ} (min) and D+ < V_{IH} (min) D+ > V_{IHZ} (min) and D- < V_{IH} (min)
Resume state	Data K state	
Start-of-Packet (SOP)	Data lines switch from Idle to K state	
End-of-Packet (EOP)	SE0 for ≥ 1 bit time[1] followed by a J state for 1 bit time	SE0 for ≥ 1 bit time[1] followed by a J state
Disconnect (at downstream port)	SE0 for ≥ 2.5µs	
Connect (at downstream port)	Idle for ≥ 2ms	Idle for ≥ 2.5µs
Reset	D+ and D- < V_{IL} (max) for ≥ 10ms	D+ and D- < V_{IL} (max) for ≥ 2.5µs

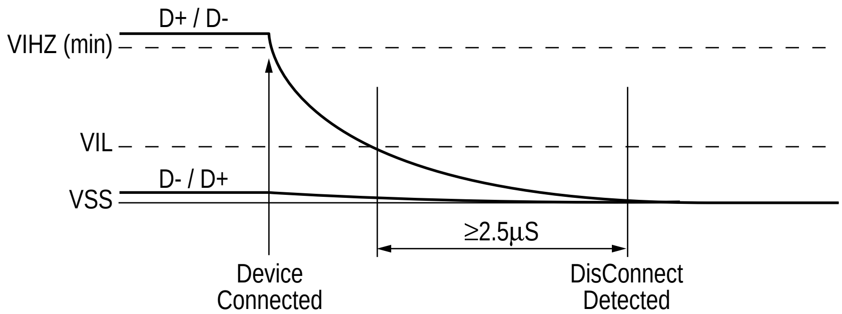
Note: The width of EOP is defined in bit times relative to the device type receiving the EOP. The bit time is approximate.

9) Timing Chart

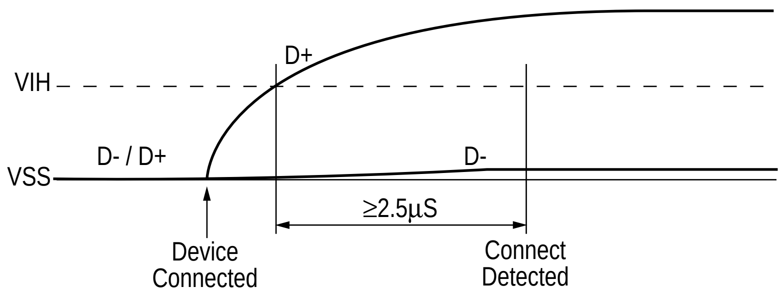
a) Packet Voltage Levels



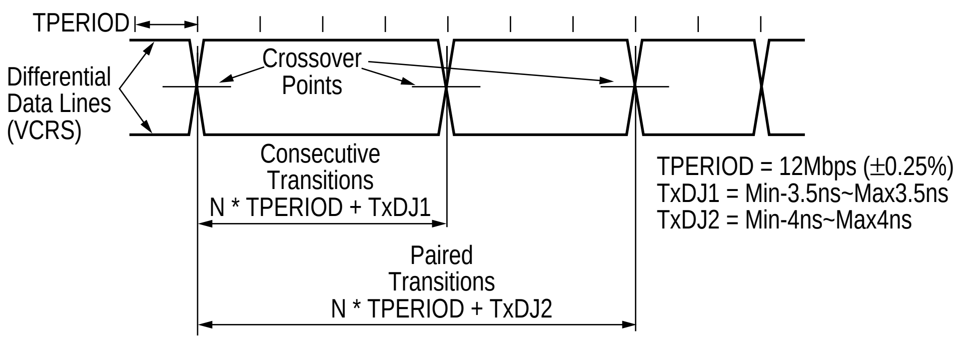
b) Disconnect Detection



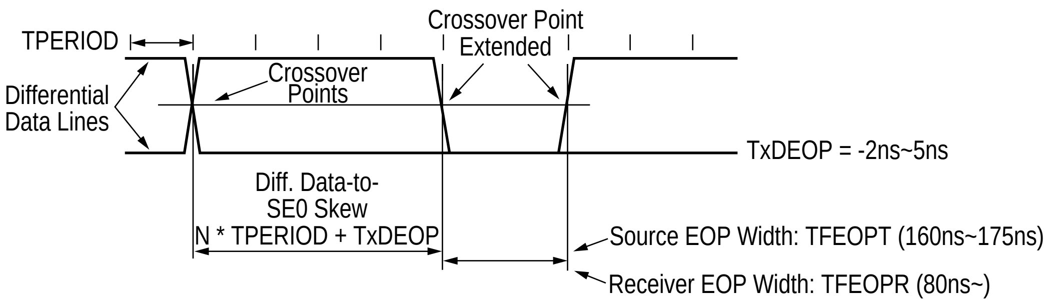
c) Full-speed Device Connect Detection



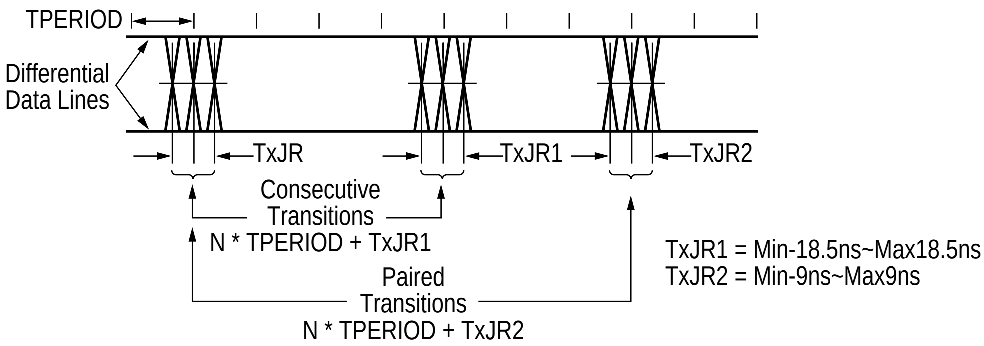
d) Differential Data Jitter



e) Differential-to-EOP Transition Skew and EOP Width

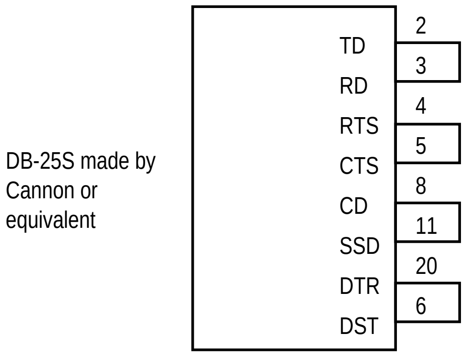


f) Receiver Jitter Tolerance



Appendix D LOOP TEST (RS-232C INTERFACE)

1) Connect the test connector



Test Connector Connection Diagram

2) Select "LOOP Test" in the system maintenance mode.
The codes transmitted from the TD signals are comparatively checked with the data received from the RD signals. If any error occurs, the error message is displayed on the LCD.

Appendix E DIAGNOSTICS TEST

1. Maintenance Modes

- The maintenance modes consist of the user maintenance mode which are released to the user, and the system and engine maintenance modes in the maintenance personnel level not released to the user.

- Press the MENU key to update each category. The operation returns to the first category after updating the last category, in a loop.

- Press the Enter key to execute the function being displayed.

- To exit from any of these modes during a category display, press the *Recover* or ON LINE key and the operation mode will start.

1.1 User Maintenance Mode

- To enter the user maintenance mode, turn the power on while keeping the MENU key pressed down.

- This mode uses the menu for function selection.

- The user maintenance mode provides the following functions:

(1) Hex Dump

- The data received from the host (higher position) is dumped in hexadecimal notation to the printer.

- Printing is activated automatically when the received data exceeds one page. If the received data is less than one page, printing can be activated manually by pressing the FORM FEED key after desetting the off-line mode by pressing the ON LINE key (automatic activation of printing even when the received data is less than one page is possible by selecting the Auto Eject function on the menu).

- The only way to exit from this mode is by turning the power off.

(2) Menu Reset

- All settings for Menu level-1 are reset to factory default values.
  The menus for all executable emulations, including options, are reset to factory default values.(See Table 4-1)

- The operation mode starts automatically upon completion of resetting.

(3) Drum Counter Reset

- This function resets the drum life data when the user replaces the image drum unit.

- The operation mode starts automatically upon completion of resetting.

(4) X-Adjust / Y-Adjust

- This function sets the first character printing position on the first line.
- The operation mode starts automatically upon completion of resetting.

(5) Operator Panel Menu Disable

- This function is for enabling and disabling the operation panel menu functions (Menu 1, Menu 2, Tray Select, Copies and Paper Size).

(6) Receive Buffer Area size

(7) ECP Receive Disable

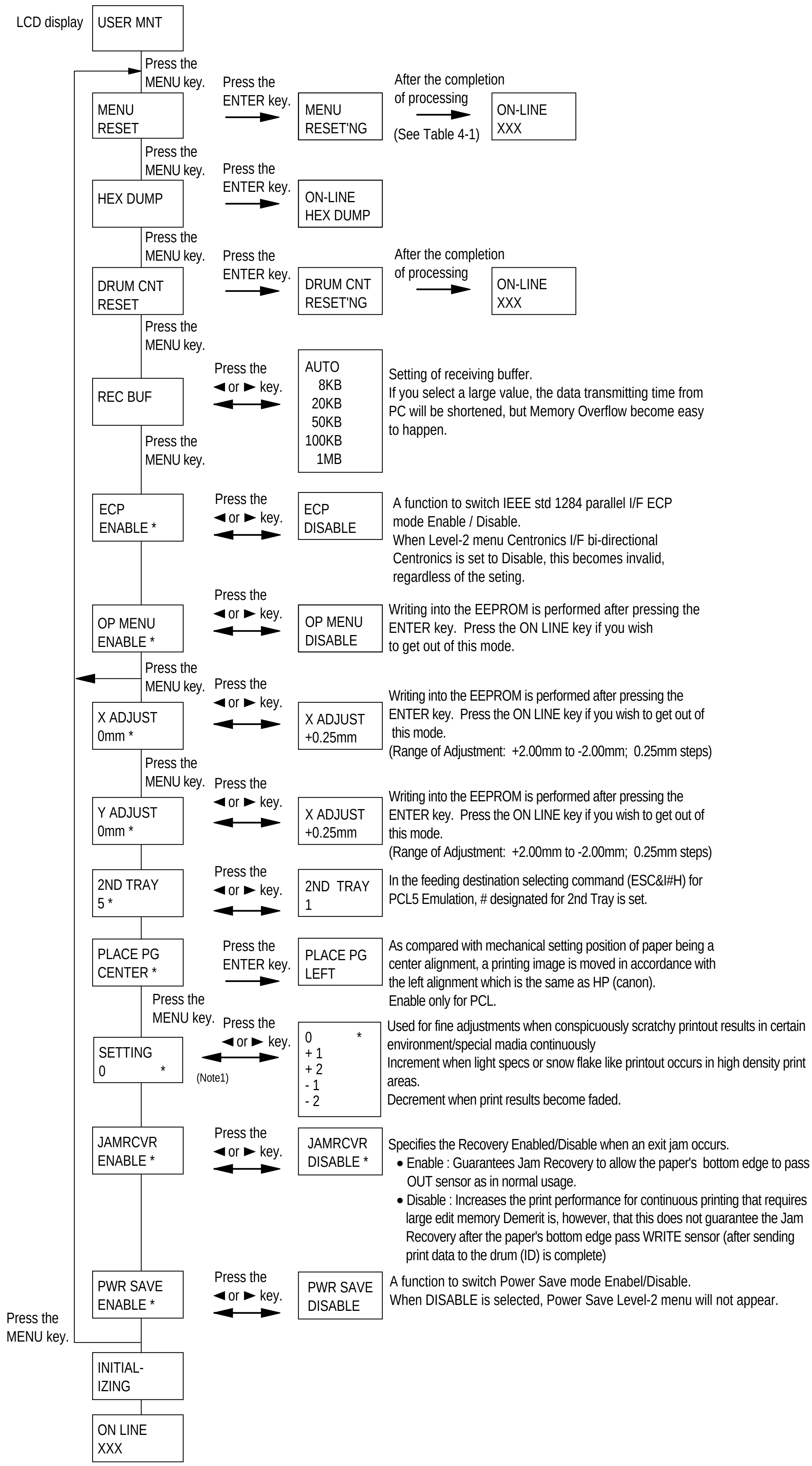
(8) Designated for 2nd Tray command for PCL5 Emulation is set.

(9) Place Page

(10) Setting

(11) Jam Recovery & Print Performance for continuous mode

(12) Powe Save Mode Disable


LCD display
USER MNT
Press the MENU key.
MENU RESET
Press the ENTER key.
MENU RESET'NG
After the completion of processing
(See Table 4-1)
ON-LINE XXX
Press the MENU key.
HEX DUMP
Press the ENTER key.
ON-LINE HEX DUMP
Press the MENU key.
DRUM CNT RESET
Press the ENTER key.
DRUM CNT RESET'NG
After the completion of processing
ON-LINE XXX
Press the MENU key.
REC BUF
Press the ◄ or ► key.
AUTO 8KB 20KB 50KB 100KB 1MB
Setting of receiving buffer.
If you select a large value, the data transmitting time from PC will be shortened, but Memory Overflow become easy to happen.
Press the MENU key.
ECP ENABLE *
Press the ◄ or ► key.
ECP DISABLE
A function to switch IEEE std 1284 parallel I/F ECP mode Enable / Disable.
When Level-2 menu Centronics I/F bi-directional Centronics is set to Disable, this becomes invalid, regardless of the seting.
OP MENU ENABLE *
Press the ◄ or ► key.
OP MENU DISABLE
Writing into the EEPROM is performed after pressing the ENTER key. Press the ON LINE key if you wish to get out of this mode.
Press the MENU key.
X ADJUST 0mm *
Press the ◄ or ► key.
X ADJUST +0.25mm
Writing into the EEPROM is performed after pressing the ENTER key. Press the ON LINE key if you wish to get out of this mode.
(Range of Adjustment: +2.00mm to -2.00mm; 0.25mm steps)
Press the MENU key.
Y ADJUST 0mm *
Press the ◄ or ► key.
X ADJUST +0.25mm
Writing into the EEPROM is performed after pressing the ENTER key. Press the ON LINE key if you wish to get out of this mode.
(Range of Adjustment: +2.00mm to -2.00mm; 0.25mm steps)
2ND TRAY 5 *
Press the ◄ or ► key.
2ND TRAY 1
In the feeding destination selecting command (ESC&l#H) for PCL5 Emulation, # designated for 2nd Tray is set.
PLACE PG CENTER *
Press the ENTER key.
PLACE PG LEFT
As compared with mechanical setting position of paper being a center alignment, a printing image is moved in accordance with the left alignment which is the same as HP (canon).
Enable only for PCL.
Press the MENU key.
SETTING 0 *
Press the ◄ or ► key.
(Note1)
0 * +1 +2 -1 -2
Used for fine adjustments when conspicuously scratchy printout results in certain environment/special madia continuously
Increment when light specs or snow flake like printout occurs in high density print areas.
Decrement when print results become faded.
JAMRCVR ENABLE *
Press the ◄ or ► key.
JAMRCVR DISABLE *
Specifies the Recovery Enabled/Disable when an exit jam occurs.
• Enable : Guarantees Jam Recovery to allow the paper's bottom edge to pass OUT sensor as in normal usage.
• Disable : Increases the print performance for continuous printing that requires large edit memory Demerit is, however, that this does not guarantee the Jam Recovery after the paper's bottom edge pass WRITE sensor (after sending print data to the drum (ID) is complete)
PWR SAVE ENABLE *
Press the ◄ or ► key.
PWR SAVE DISABLE
A function to switch Power Save mode Enabel/Disable.
When DISABLE is selected, Power Save Level-2 menu will not appear.
Press the MENU key.
INITIAL-IZING
ON LINE XXX

1.2 System Maintenance Mode

- To enter the system maintenance mode, turn the power on while keeping the *Recover* key pressed down.
- This mode adopts the menu for function selection.
- The system maintenance mode provides the following functions:

(1) Page Count Display

- The total number of pages counted at the engine block is displayed on the LCD.

(2) Page Count Printing Enable/Disable

- This function allows the selection to include (enable) or exclude (disable) the total number of printed pages counted at the engine block at the time of menu printing.

(3) Rolling ASCII Continuous Printing

- The rolling ASCII pattern is printed continuously for various engine tests.
- Press the ON LINE key to cancel this mode.

(4) Loop Test

- The loop test is for testing the serial I/F functions without connecting the printer to the host.
- The data is sent and received by loop back in the loop test.
- The loop test is performed even when another interface is being selected in Menu level-2.
- Installation of the loop connector is necessary for the loop test (refer to Appendix C, LOOP TEST (RS-232C INTERFACE)).
- The realtime loop count is displayed on the LCD.
- When an error occurs in the course of the test, the corresponding error message is displayed on the LCD.
- Press the ON LINE key to cancel this mode.

(5) EEPROM Reset

- All EEPROM areas, including Menu level-2 are set to the factory default values.
  (See Table 4-1)
- The following items are excluded:

  Head drive time setting

  Fine adjustment of printing start position

  Standard tray paper feed amount setting

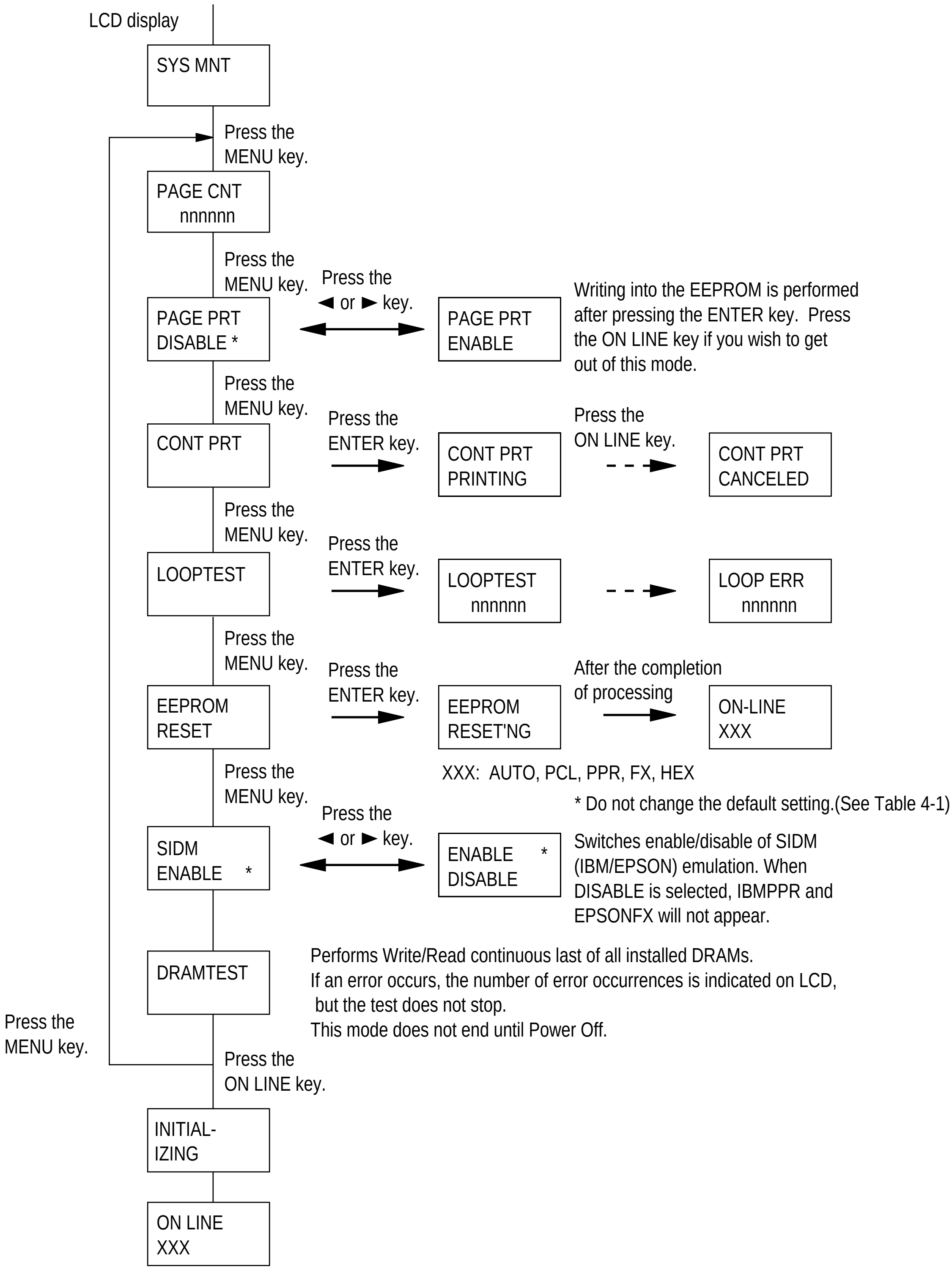
- Transition to the operation mode occurs upon completion of resetting.
- Press the MENU key to update each category.
  The operation returns to the first category after updating the last category, in a loop.

(6) SIDM Emulation Disable

(7) DRAM Memory Test

(8) System Maintenance Mode Menu System

1.3 Engine Maintenance Mode



- The engine maintenance mode is activated when the power is turned ON while keeping the FORM FEED key and ENTER key pressed down.
- This mode adopts the menu for function selection.
- The method for exit from this mode depends on the setting.
- The engine maintenance mode provides the following functions:

(1) Head Drive Time Setting

- Sets the drive time of the LED head.

(2) 600 x 1200 DPI strobe time

- Do not change the default setting.

(3) Printing Start Position Setting

- Sets the printing start position.

(4) Drum Count Total Display

- Displays on the LCD the total number of drum revolutions of the unit, counted at the engine block.

(5) Drum Count Display

- Displays on the LCD the total number of EP drum revolutions counted at the engine block.

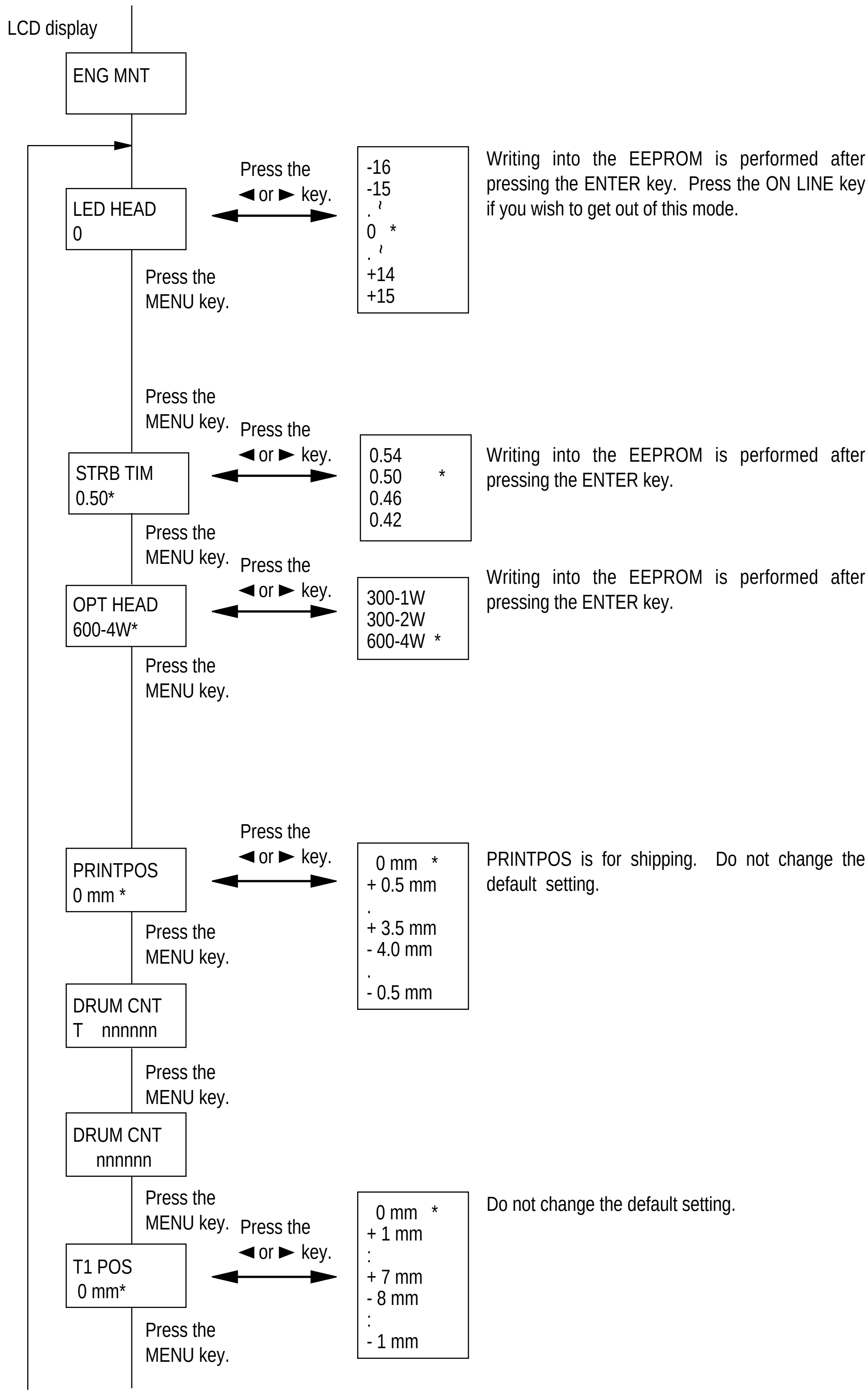
(6) Factory Adjustment (for High Capacity Second Paper Feeder/Power Envelope Feeder)

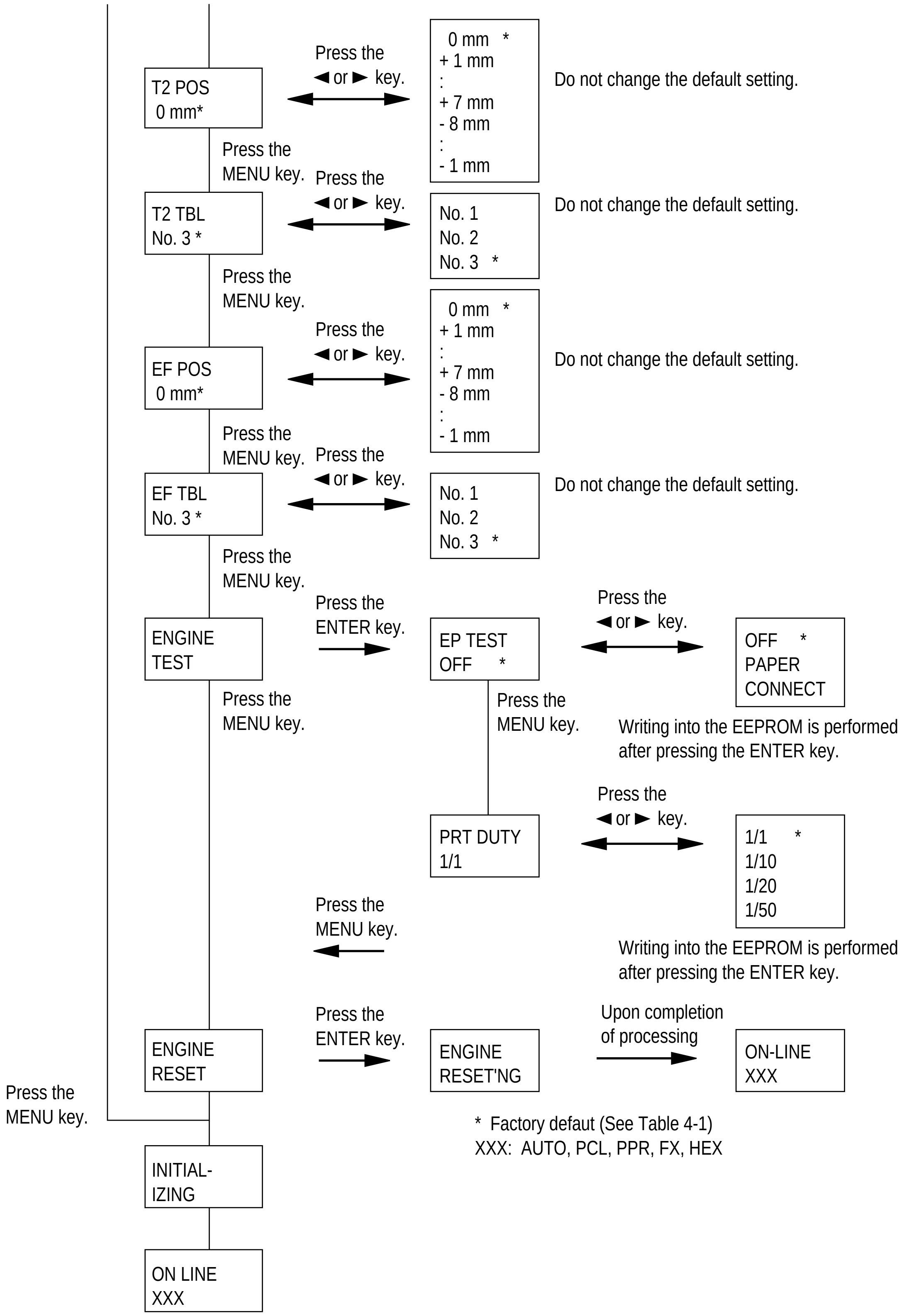
- Do not change the default settings since these are factory settings and were set at the factory.

(7) Engine Reset

- No items subjected to, All except counters are subjected to reset, As a common spec. (See Table 4-1)

- Engine maintenance mode menu system





* Factory defaut (See Table 4-1)
XXX: AUTO, PCL, PPR, FX, HEX

1.4 User Factory Set Operation

The desired destination can be set by turning the power on while depressing two keys corresponding to the destination according to the following table.

This function shall not be open for users.

Destination	Keys to be Depressed
ODA	MENU ⊳
OEL	MENU ⊲
INT A (A4) (Australia, etc.)	MENU, PAPER SIZE
INT L (Letter) (Singapore, etc.)	MENU, TRAY TYPE

APPENDIX F MULTI PURPOSE FEEDER MAINTENANCE

1. OUTLINE

1.1 Functions

This Multi-Purpose Feeder is installed on the front section of the printer, and it supplies paper automatically through the operation of pulse motor, which is driven by signals sent from the printer. The main functions are the followings:

- Paper that can be used:

[Paper Types]

• Standard paper:	Xerox 4200 (20-lb)	
• Special paper:	OHP sheets (for PPC), label sheets (PPC sheets)	
	* Not guaranteed for OHP sheets with attachments on the edge or reverse side.	
• Cut sheet size:	Letter, Executive, A4, A5, B5, A6	
Special size:	Width:	87 to 216mm
	Length:	148 to 297mm

[Weight and Thickness]

- 16-lb to 32-lb (60~128 g/m^2)
- For labels and OHP Sheets: Label sheets: 0.1 to 0.15mm
  OHP sheets: 0.08 to 0.11mm

* When using sheets which exceed 24-lb, make sure that the paper exits through the face-up route.

1.2 External View and Component Names

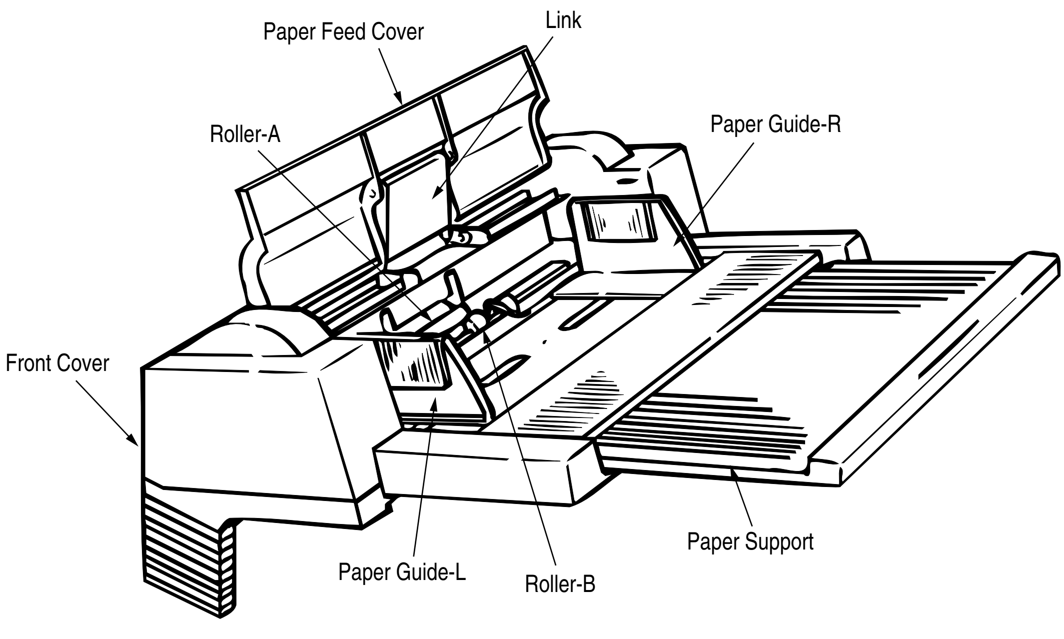


Figure 1-1

2. MECHANISM DESCRIPTION

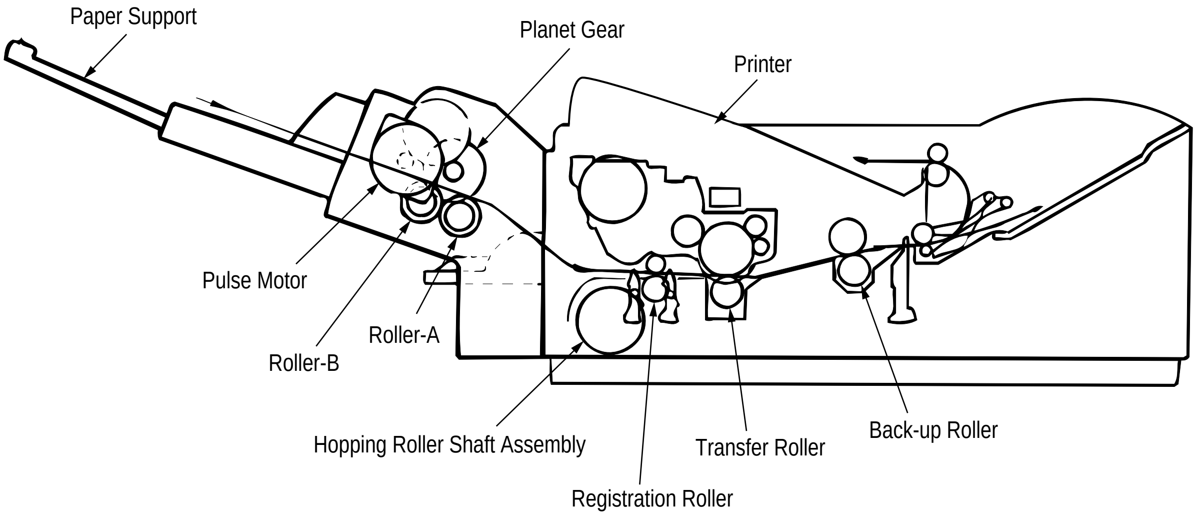
2.1 General Mechanism

The Multi-Purpose Feeder feeds the envelopes and paper into the printer by receiving the signal from the printer, which drives the pulse motor inside the Multi-Purpose Feeder, and this motion is transmitted to rotate roller-A and B. The envelope or paper is delivered from the separator into the printer.

Once delivered into the printer, the envelope or paper is then controlled and fed through by pulse motor (registration) of the printer.

2.2 Hopper Mechanism

The hopper automatically feeds the printer with the envelope or paper being set, one sheet at a time. After the envelope or paper is set in the Multi-Purpose Feeder, the pulse motor moves the envelope or paper and a single envelope or paper caught by the separator is fed into the printer.



3. PARTS REPLACEMENT

This section covers the procedures for the disassembly, reassembly and installations in the field. This section describes the disassembly procedures, and for reassembly procedures, basically proceed with the disassembly procedures in the reverse order.

3.1 Precautions Concerning Parts Replacement

(1) Parts replacements must be carried out, by first turning the printer power switch off “O” and removing the Multi-Purpose Feeder from the printer.

(2) Do not disassemble the Multi-Purpose Feeder if it is operating normally.

(3) Establish the extent of disassembly suitable for the purpose of the procedure, and do not disassemble any more than necessary.

(4) Only specified service tools may be used.

(5) Disassembly must be carried out according to the prescribed procedures. Parts may be damaged if such procedures are not followed.

(6) Small parts such as screws and collars can easily be lost, therefore these parts should be temporarily fixed in the original location.

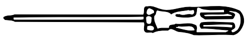
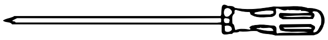
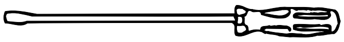
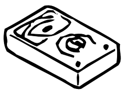
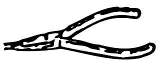
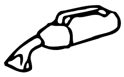
(7) When handling printed circuit boards, do not use any glove which may generate static electricity.

(8) Do not place the printed circuit boards directly on the equipment or floor.

[Service Tools]

Table 3-1 shows the tools required for the replacement of printed circuit boards, assemblies and units in the field.

Table 3-1 Service Tools

No.	Service Tools		Q'ty	Application	Remarks
1		No. 1-100 Philips screwdriver	1	2 ~ 2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3 ~ 5 mm screws	
3		No. 3-100 screwdriver	1		
4		No. 5-200 screwdriver	1		
5		Digital multimeter	1		
6		Pliers	1		
7		Handy cleaner	1		

3.2 Parts Layout

This section describes the layout of the main components.

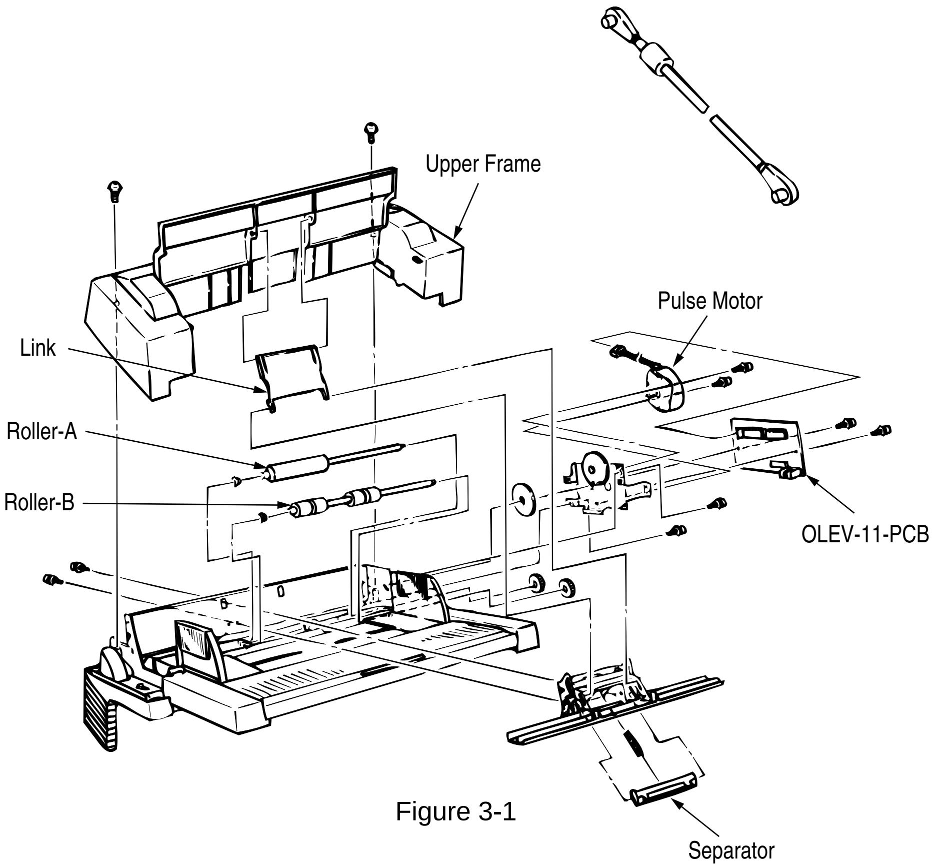


Figure 3-1

3.3 Parts Replacement Methods

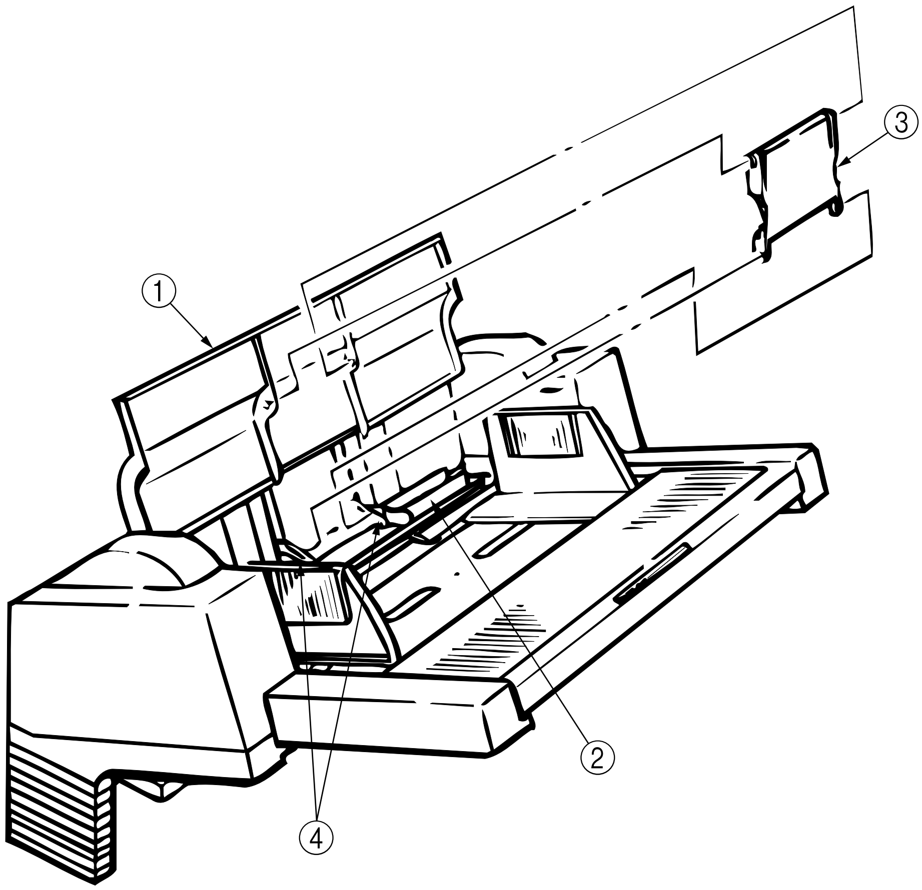
This section describes the parts replacement methods for the components listed in the disassembly order diagram below.

Multi-Purpose Feeder
- Link (3.3.1)
- Separator (3.3.2)
- OLEV-11-PCB (3.3.3)
- Pulse motor (3.3.4)
- Planet gear (3.3.5)
- Roller-A (3.3.6)

3.3.1 Link

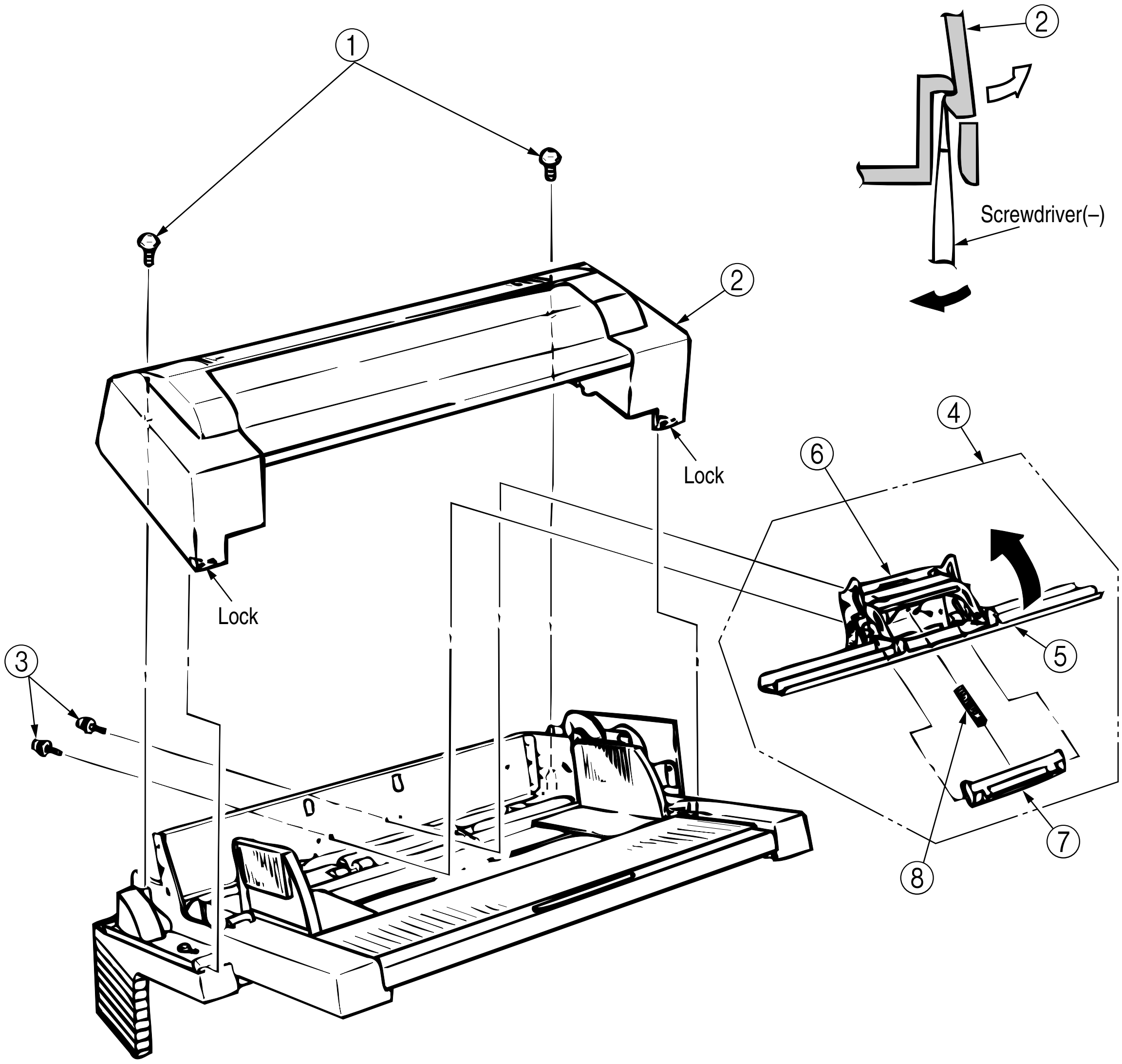
(1) Open paper feed cover ①, and disengage the paper feed cover ① and link ③, while lifting the paper hold ②.
(2) Remove the paper hold ② off the arm ④.
(3) Disengage the link ③ from the arm ④, and remove it.

* Be careful not to deform the link and arm.



3.3.2 Separator

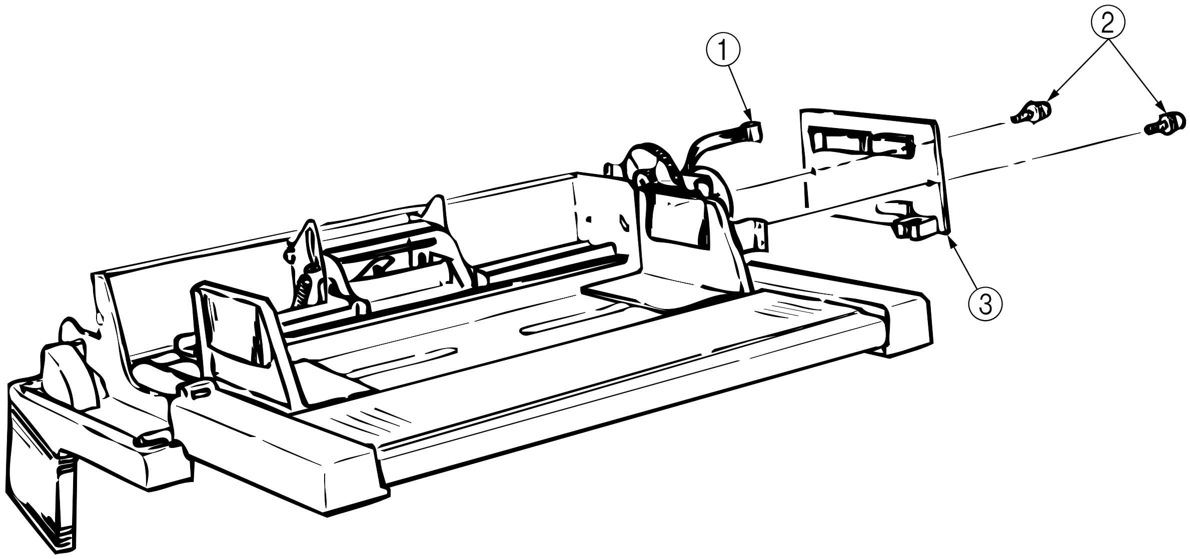
(1) Turn the power switch off “O” and remove the connector cable.
(2) Disengage the link and paper feeder cover (see 3.3.1).
(3) Remove 2 screws ①, disengage the locks at 2 locations on the upper frame ② with a screwdriver, and remove the upper frame ②.
(4) Remove 2 screws ③, and take out the separator assembly ④.
(5) Disengage the separator ⑦ from the separator bracket ⑥ while lifting the paper hold ⑤, and take out the separator (be careful not to lose the spring ⑧ when you are doing this).

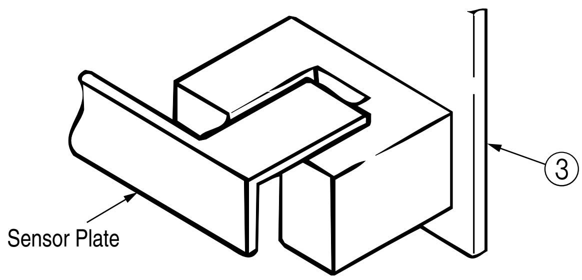


3.3.3 OLEV-11-PCB

(1) Remove the upper frame [see 3.3.2 steps (1) through (3)].
(2) Remove the connector ①.
(3) Remove 2 screws ②, and remove the OLEV-11 PCB ③.

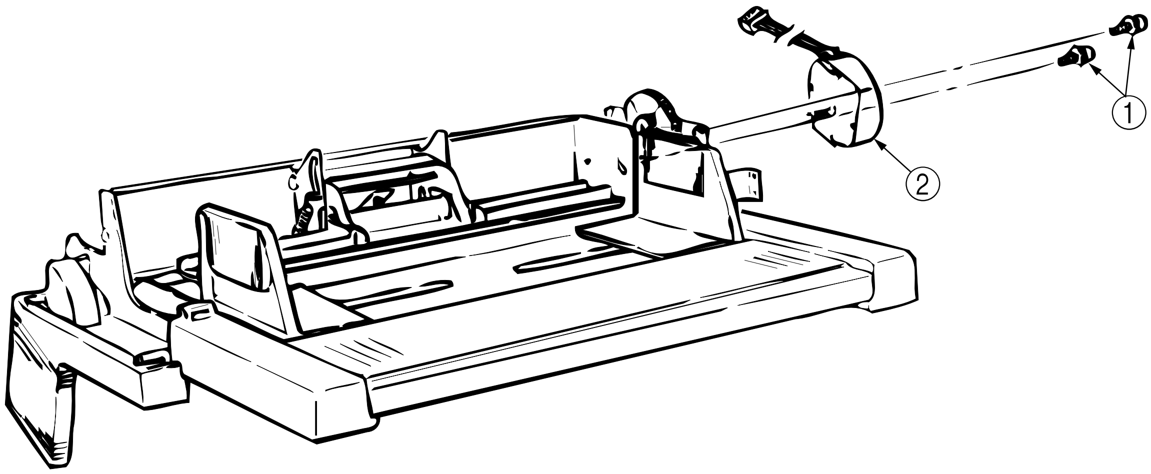
When reinstalling the printed circuit board, be careful to make sure that the sensor plate is being set correctly.





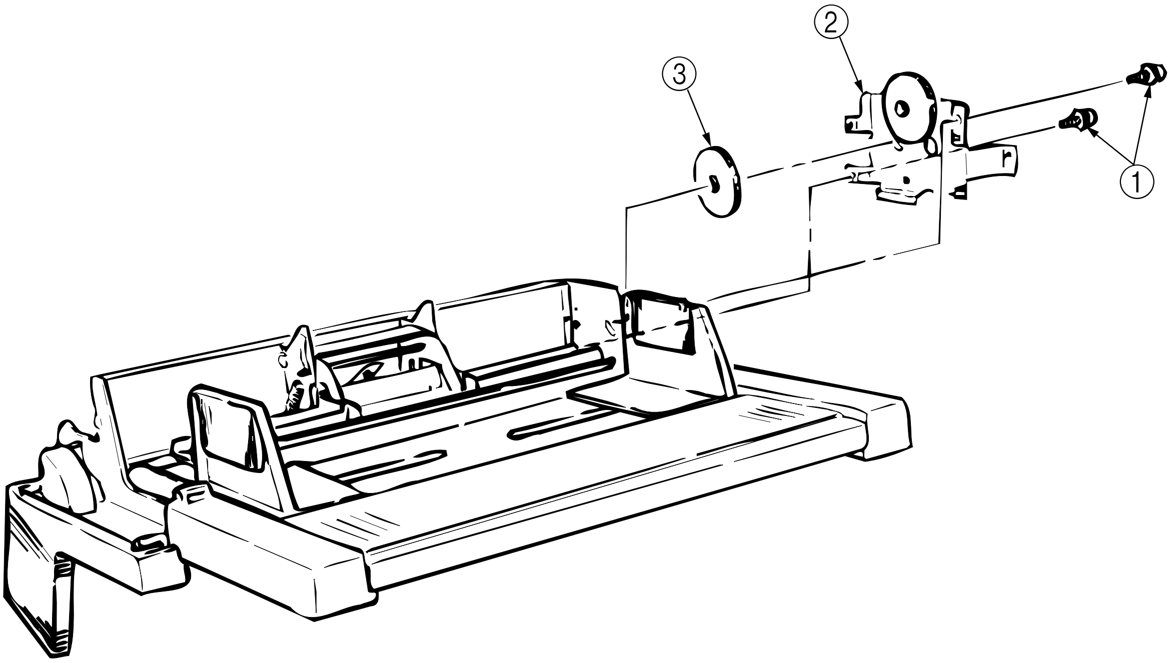
3.3.4 Pulse Motor

(1) Remove the upper frame [see 3.3.2 steps (1) through (3)].
(2) Remove the OLEV-11-PCB (see 3.3.3).
(3) Remove 2 screws ①, and remove the pulse motor ②.



3.3.5 Planet Gear

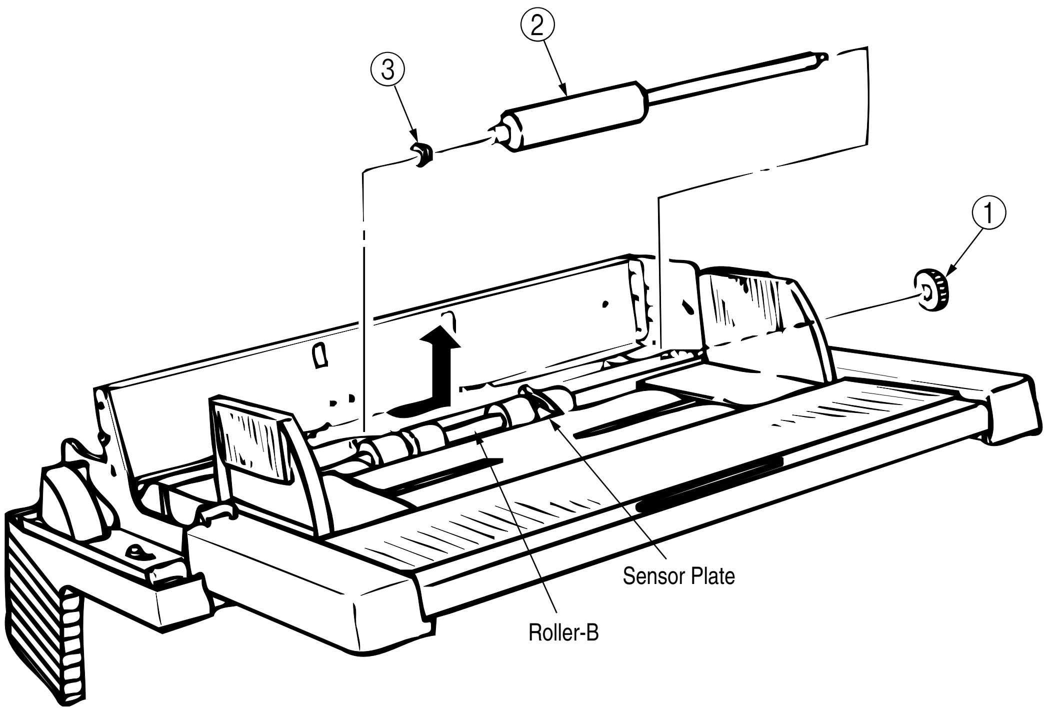
(1) Remove the upper frame [see 3.3.2 steps (1) through (3)].
(2) Remove the OLEV-11-PCB (see 3.3.3).
(3) Remove 2 screws ①, and remove the motor bracket assembly ② and planet gear ③.



3.3.6 Roller-A and B

While only the removal procedure for roller-A is described here, the removal procedure for roller-B is basically same. When removing roller-B, however, be careful not to deform the sensor plate.

(1) Remove the upper frame [see 3.3.2 steps (1) through (3)].
(2) Remove the separator assembly (see 3.3.2).
(3) Remove the OLEV-11-PCB (see 3.3.3).
(4) Remove the motor bracket (see 3.3.5).
(5) Remove the gear ①.
(6) Shift the roller-A ② to the right, lift it on its left side and slide it out (the bearing ③ also comes off while you are doing this, so be careful not to lose it).



4. TROUBLESHOOTING

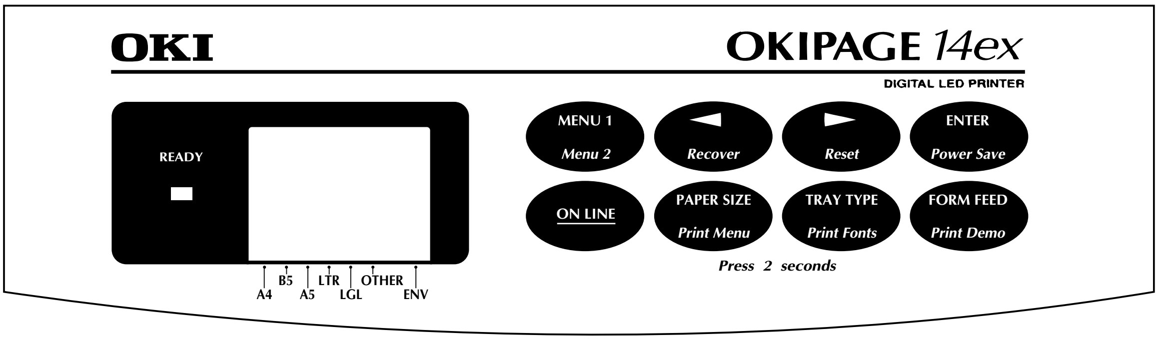
4.1 Precautions Prior to the Troubleshooting

(1) Go through the basic checking items provided in the Printer Handbook.
(2) Obtain detailed information concerning the problem from the user.
(3) Go through checking in the conditions similar to that in which the problem occurred.

4.2 Preparations for the Troubleshooting

(1) Display on the operator panel
The status of the problem is displayed on the LCD (Liquid Crystal Display) on the operator panel. Go through the appropriate troubleshooting procedures according to the messages displayed on the LCD.

[ODA/OEL/INT]



Status message display

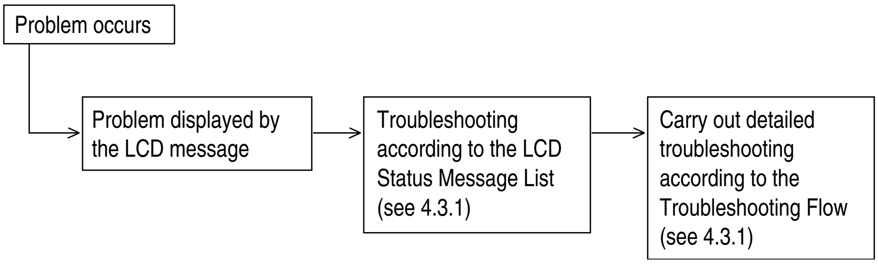
Ready LED display

■ : OFF ☒ : BLINKING

▒ : ON □ : Undefined

4.3 Troubleshooting Method

When a problem occurs, go through the troubleshooting according to the following procedure.



4.3.1 LCD Status Message List

The listing of the statuses and problems displayed in the form of messages on the LCD is provided in Table 4-1.

Classification	LCD Status Message	Description	Recovery method
Jam error	FEEDER INPUT JAM FEEDER FEED JAM FEEDER EXIT JAM	Notifies of occurrence of jam while the paper is being fed from Multi-Purpose Feeder.	• Check the paper in the Multi-Purpose Feeder. Carry out the recovery printing by opening and closing the cover, and turn the error display off. • When the problem occurs frequently, go through the Troubleshooting.
Paper size error	FEEDER SIZE ERR	Notifies of incorrect size paper feeding from Multi -Purpose Feeder.	• Check the paper in the Multi-Purpose Feeder. Also check to see if there was a feeding of multiple sheets. Carry out the recovery printing by opening and closing the cover, and turn the error display off.
Tray paper out	FEEDER PAPEROUT	Notifies of no paper state of the Multi-Purpose Feeder.	• Load the paper in Multi-Purpose Feeder.

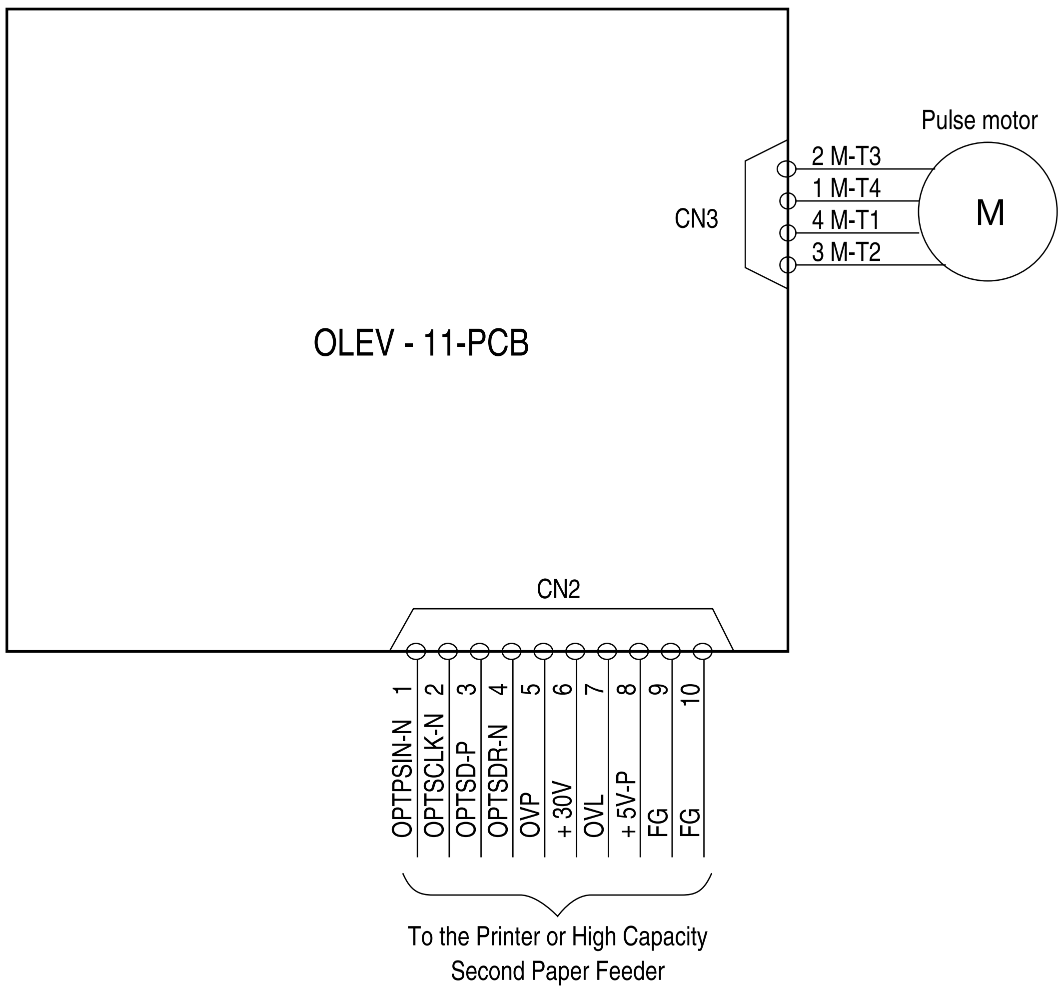
• (JAM error)

<u>Paper Inlet Jam</u>

- Does paper jam at the inlet when the power is turned on?
    - YES Is the paper located above the sensor plate (inlet)?
        - YES Remove the paper.
    - NO Is the sensor plate (inlet) operating normally?
        - NO Replace the sensor plate (inlet).
    - YES Replace the power supply/sensor board or inlet sensor.
- NO When the paper is fed in, does the paper inlet jam occur?
    - YES Is the paper being fed to above sensor plate (inlet)?
        - YES Is the sensor plate (inlet) operating normally?
            - NO Replace the sensor plate (inlet).
        - YES Clean the inlet sensor on the power supply/sensor board or replace the power supply/sensor board or inlet sensor.
    - NO Replace the roller-A or roller-B.
- NO Are the roller-A and roller-B rotating?
    - YES Set the paper properly.
- NO Is the pulse motor turning?
    - YES Replace the planet gear.
- NO Is the connector cable being connected properly?
    - NO Connect the connector cable properly.
- YES Check the coil resistance (approx. 32Ω) of the pulse motor.
  Is it normal?
    - NO Replace the pulse motor.
- YES Replace the OLEV-11-PCB.

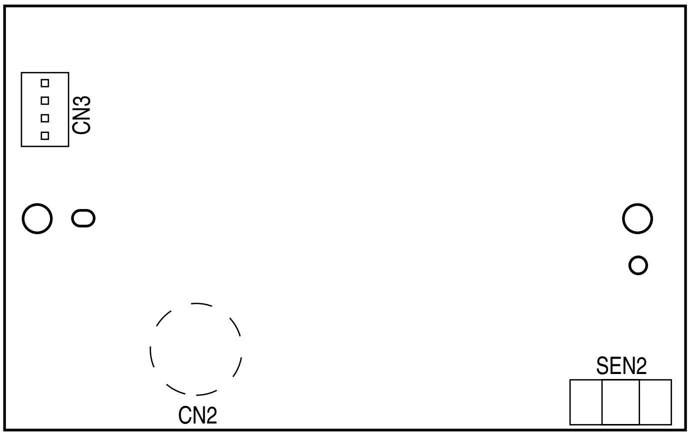
5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



5.2 PCB Layout

OLEV-11-PCB



6. PARTS LIST

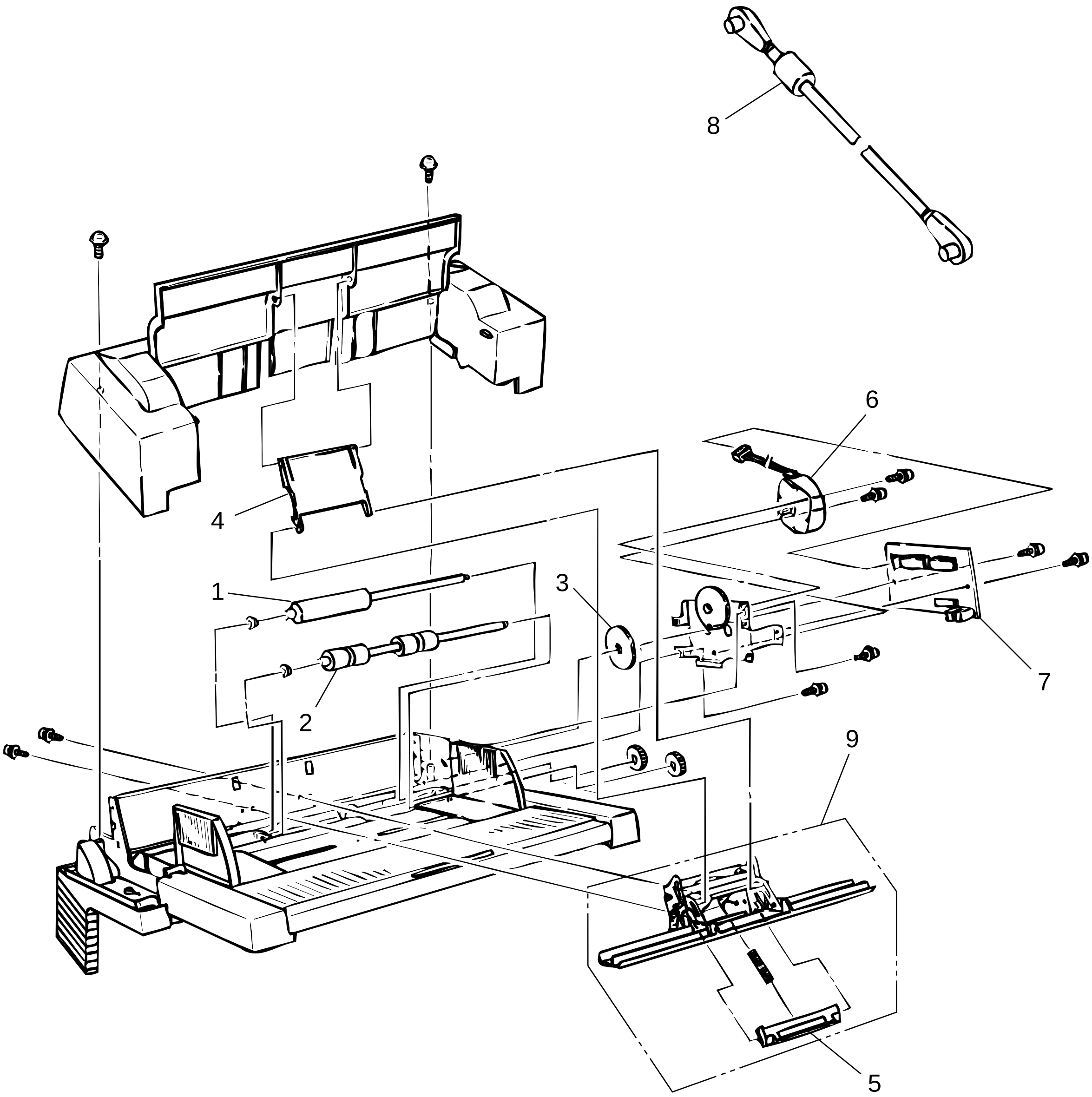


Figure 6-1 Multi-Purpose Feeder

Table 6-1 Multi-Purpose Feeder

No.	Description	OKI-J Part No.	ODA Part No.	Q'ty	Remark
1	Roller-A	3PB4083-5514P001		1	
2	Roller-B	3PB4083-5524P001		1	
3	Planet gear	4PP4083-5520P001		1	
4	Link	3PP4083-5540P001		1	
5	Separator	4PP4083-5544G001		1	
6	Pulse motor	4PB4083-6075P001		1	Same as printer unit.
7	OLEV-11-PCB	4YA4121-1014G011		1	
8	Connector cable	3YS4011-3141P003		1	For ODA
		3YS4011-3141P001		1	For OEL/INT
9	Separator assy	3PA4083-5549G001		1	

APPENDIX G HIGH CAPACITY SECOND PAPER FEEDER

1. OUTLINE

1.1 Functions

The printer is mounted on top of this High Capacity Second Paper Feeder. The High Capacity Second Paper Feeder supplies paper automatically through the operation of pulse motor (hopping), which is driven by signals sent from the printer.
The main functions are the followings:

- Paper that can be used:

[Paper Type]

- Standard paper: Xerox 4200 (20-lb)
- Special paper: OHP sheets (for PPC), Label sheets (PPC sheets); use of envelopes or thick paper is not possible.
- Cut sheet size: A4, A5, B5, Letter, Executive, Legal13, Legal14
- Special size: Paper width: 148 to 216mm
  Paper length: 210 to 355.6mm

[Weight]

- 16-lb to 24-lb (60 to 90 g/m^2)

- Paper setting quantity: 500 sheets of paper weighing 64 g/m^2

1.2 External View and Component Names

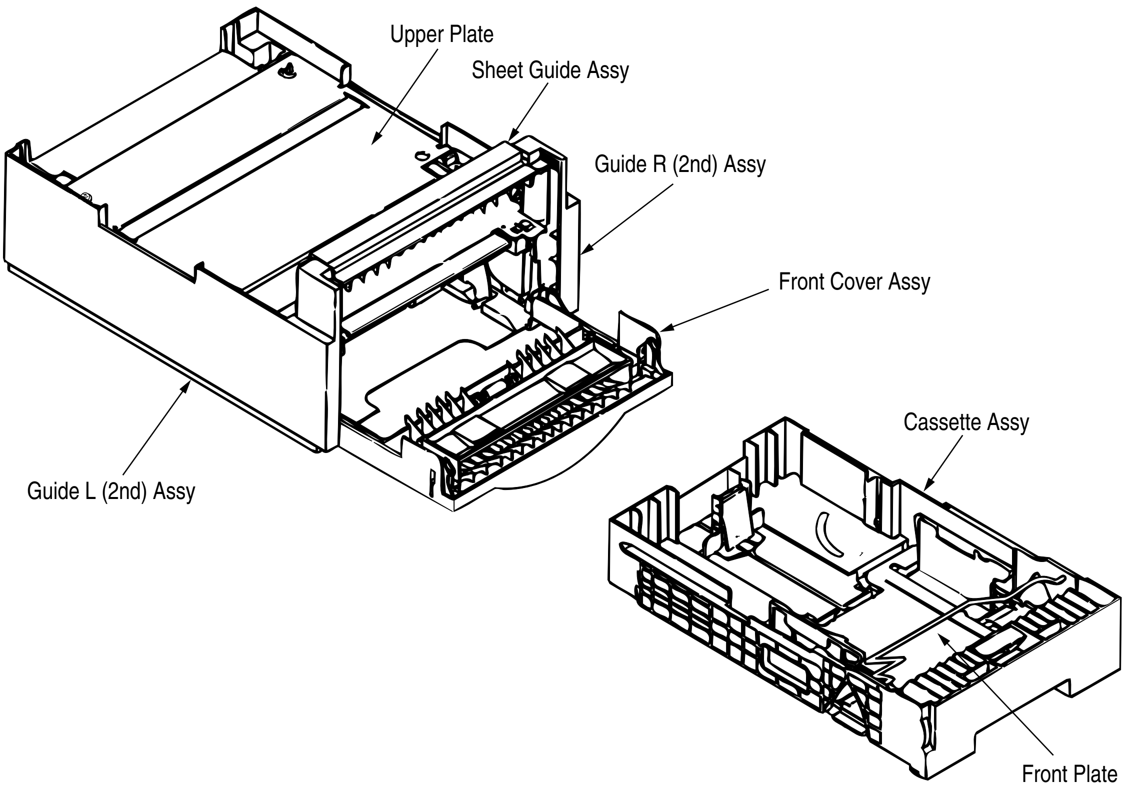


Figure 1-1 External View and Component Names

2. MECHANISM DESCRIPTION

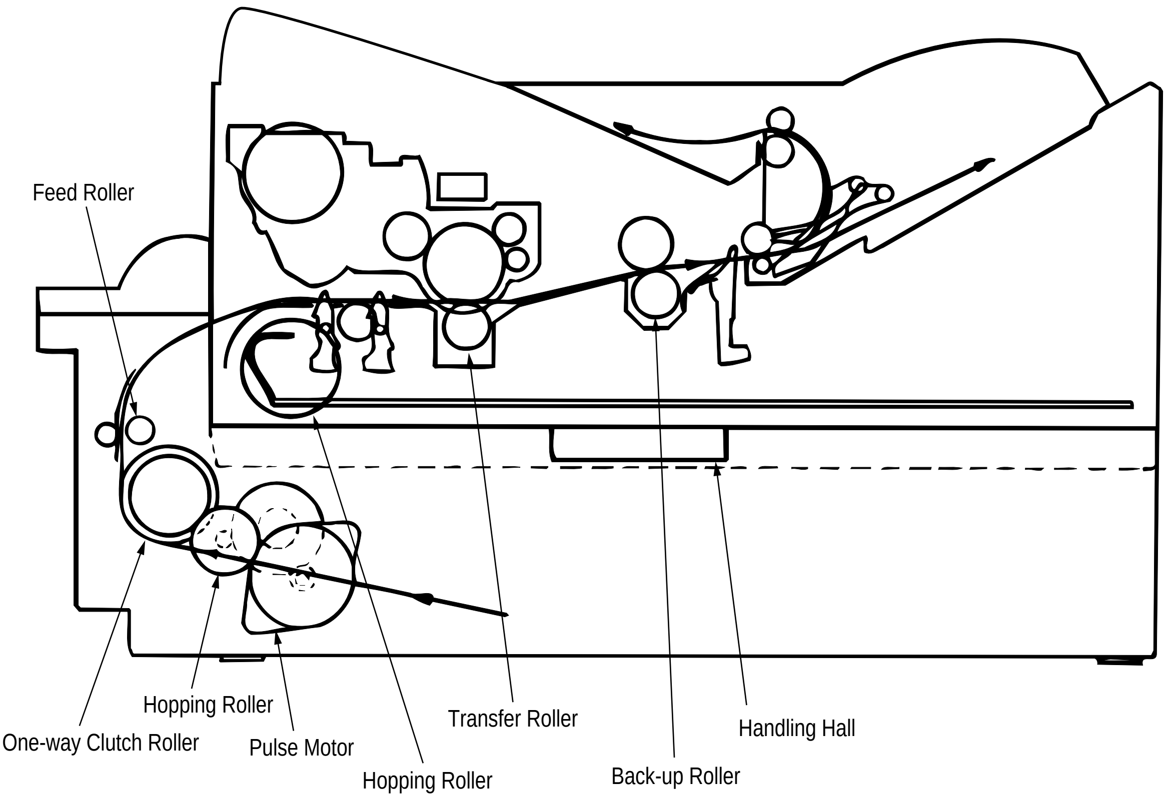
2.1 General Mechanism

The High Capacity Second Paper Feeder feeds the paper into the printer by receiving the signal from the printer, which drives the pulse motor inside the High Capacity Second Paper Feeder, and this motion is transmitted to rotate the one-way clutch of the hopping frame assembly. The paper is delivered from the hopper into the printer through the turning of the hopping roller and feed roller.

Once delivered into the printer, the paper is then controlled and fed through by pulse motor (registration) of the printer.

2.2 Hopper Mechanism

The hopper automatically feeds the printer with the paper being set, single sheet at a time. When the paper is loaded in the paper cassette, it is then transported by the pulse motor, carrying forward only a single sheet caught by the brake shoe at a time.



3. PARTS REPLACEMENT

This section covers the procedures for the disassembly, reassembly and installations in the field. This section describes the disassembly procedures, and for reassembly procedures, basically proceed with the disassembly procedures in the reverse order.

3.1 Precautions Concerning Parts Replacement

(1) Parts replacements must be carried out, by first turning the printer power switch off “O” and removing the printer from the High Capacity Second Paper Feeder.

(2) Do not disassemble the High Capacity Paper Feeder if it is operating normally.

(3) Establish the extent of disassembly suitable for the purpose of the procedure, and do not disassemble any more than necessary.

(4) Only specified service tools may be used.

(5) Disassembly must be carried out according to the prescribed procedures. Parts may be damaged if such procedures are not followed.

(6) Small parts such as screws and collars can easily be lost, therefore these parts should be temporarily fixed in the original location.

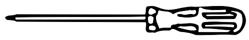
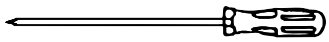
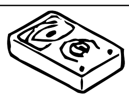
(7) When handling printed circuit boards, do not use any glove which may generate static electricity.

(8) Do not place the printed circuit boards directly on the equipment or floor.

[Service Tools]

Table 3-1 shows the tools required for the replacement of printed circuit boards, assemblies and units in the field.

Table 3-1 Service Tools

No.	Service Tools		Q'ty	Application	Remarks
1		No. 1-100 Philips screwdriver	1	2 ~ 2.5 mm screws	
2		No. 2-100 Philips screwdriver	1	3 ~ 5 mm screws	
3		No. 3-100 screwdriver	1		
4		Digital multimeter	1		
5		Pliers	1		

3.2 Parts Layout

This section describes the layout of the main components.

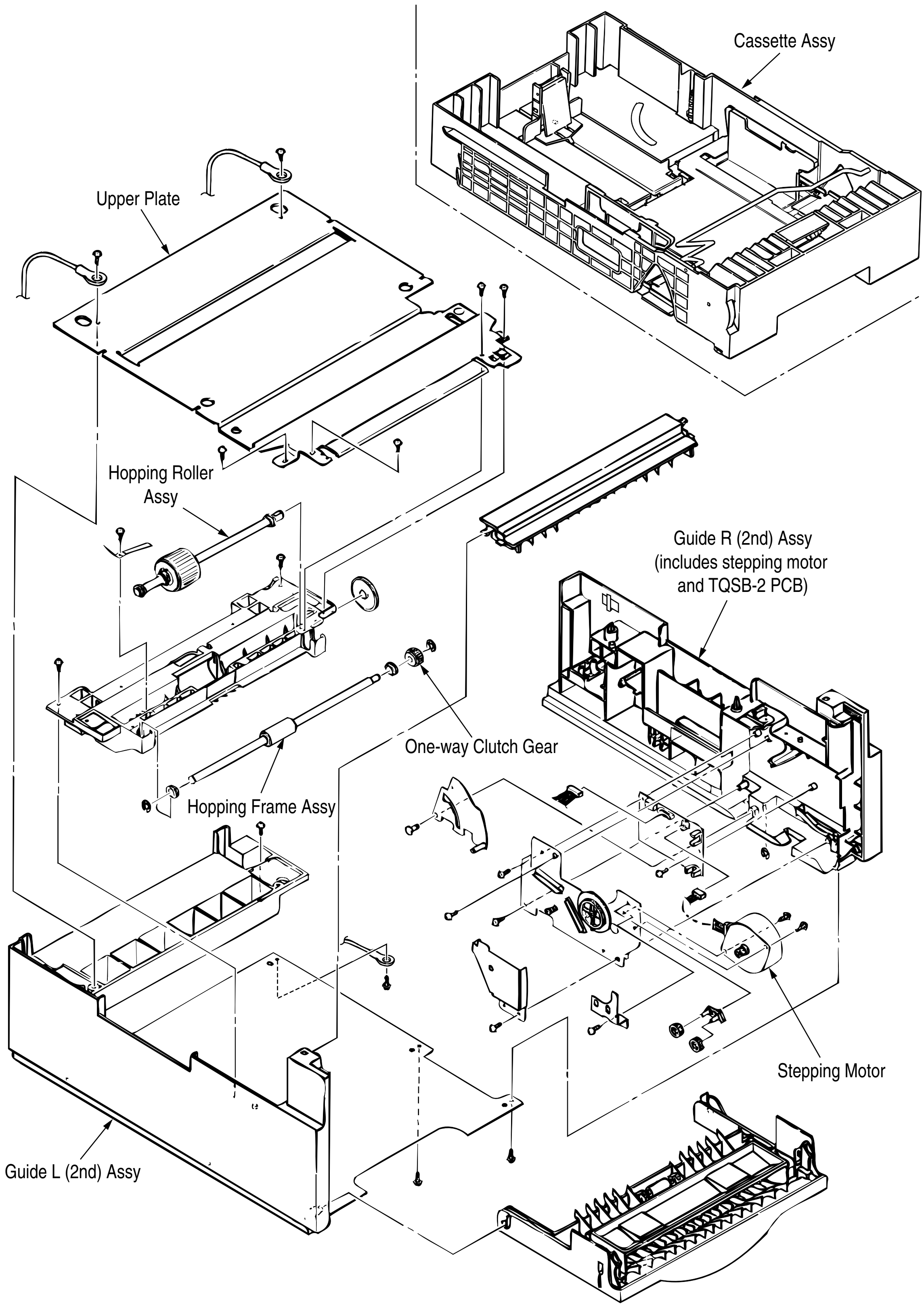


Figure 3-1

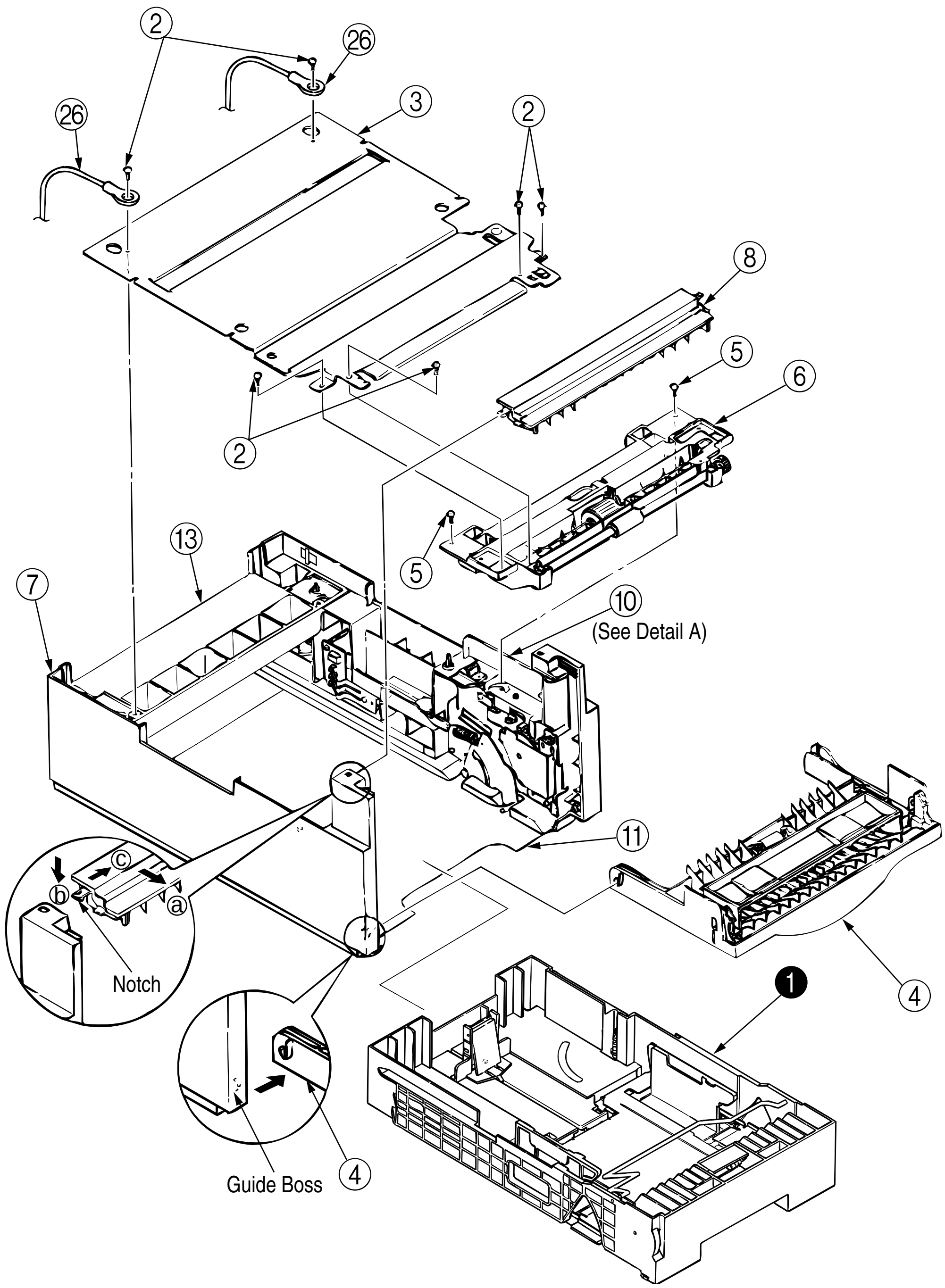
3.3 Parts Replacement Methods

This section describes the parts replacement methods for the components listed in the disassembly order diagram below.

- High Capacity Paper Feeder
  - Stepping motor (hopping) (3.3.1)
  - TQSB-2 PCB (3.3.2)
  - Hopping roller shaft assy and One-way clutch gear (3.3.3)

3.3.1 Stepping Motor (Hopping)

(1) Turn the printer power switch off, pull out the AC cord from the outlet. Remove the printer off High Capacity Second Paper Feeder.
(2) Take the paper cassette assy ❶ out of High Capacity Second Paper Feeder.
(3) Remove six screws ② and remove the upper plate ③. Remove two screws ⑤ and remove the hopping frame assy ⑥.
(4) Remove the front cover assy ④ off the guide boss on the guide L (2nd) assy ⑦ by bending the guide L (2nd) assy ⑦ in the direction of arrow shown in the magnified view below.
(5) Pull the sheet guide assy ⑧ in the direction of arrow ⓐ and also push in the direction of arrow ⓑ to unlock the notch, and bring the sheet guide assy ⑧ in the direction of arrow ⓒ to remove the sheet guide assy ⑧.



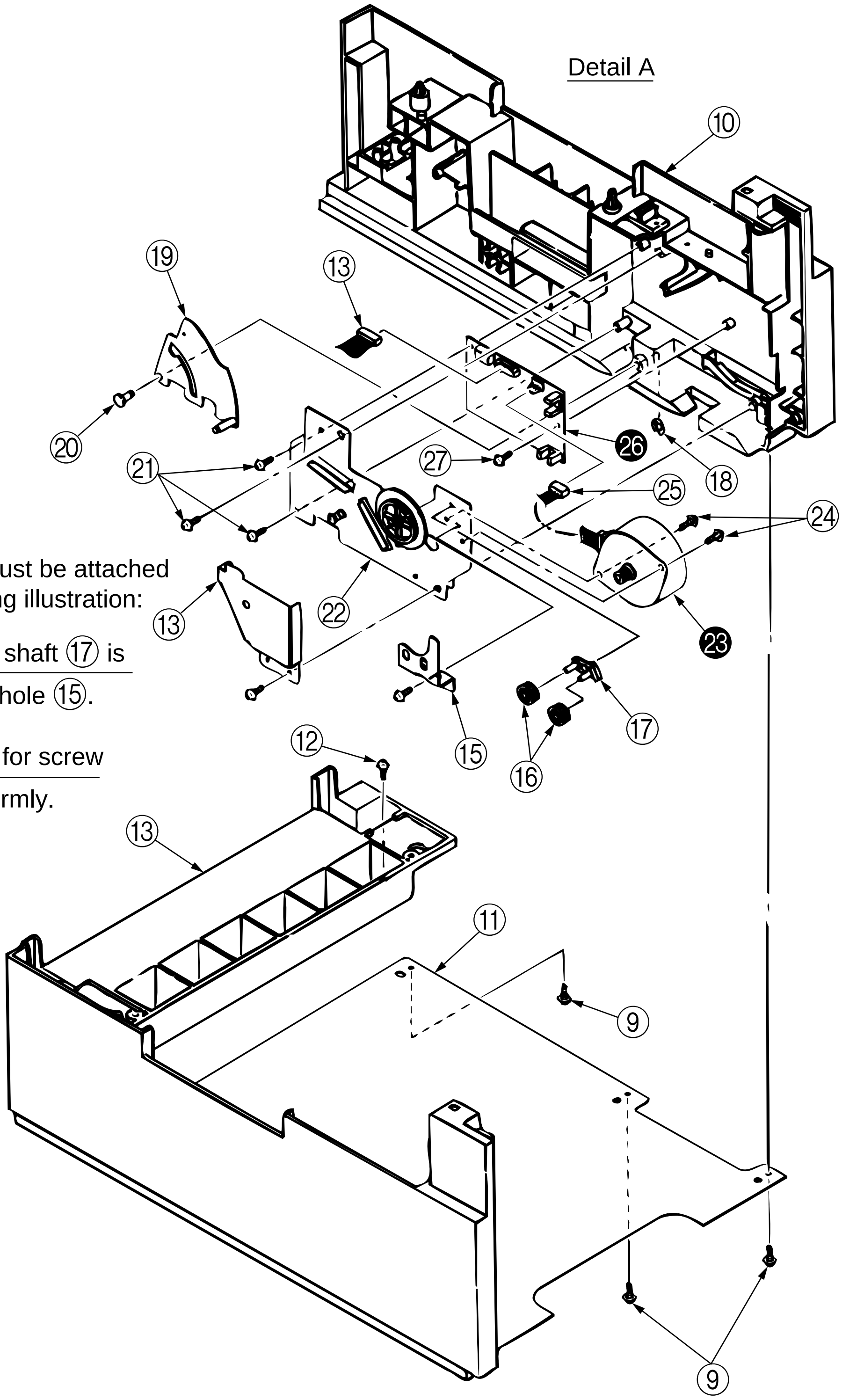
(6) Remove three screws ⑨ which are holding the guide R (2nd) assy ⑩ to the bottom plate ⑪. Remove the screw ⑫ which is keeping the rear cover ⑬ and guide R (2nd) assy ⑩. Remove the guide R (2nd) assy ⑩.

(7) Remove the protect (M) ⑭, guide bracket ⑮, planet gears ⑯ and planet gear bracket ⑰.

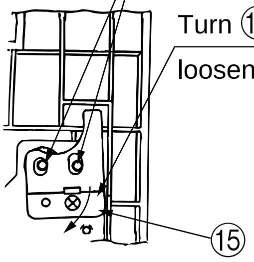
(8) Remove the E-ring ⑱ which is keeping the sheet link ⑲ on the guide R (2nd) assy ⑩, and pull out the hinge stand ⑳.

(9) Remove three remaining screws ㉑ which are keeping the motor on the motor bracket ㉒, and remove the connector off the Stepping Motor ㉓.

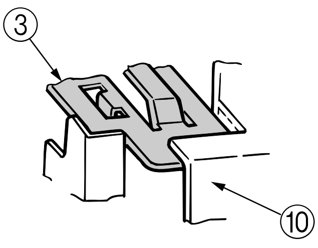
(10) Remove two screws ㉔ on the Stepping Motor ㉓.



Note : The guide bracket ⑮ must be attached as shown in the following illustration:



The upper plate ③ must be attached as shown in the following illustration.



3.3.2 TQSB-2 PCB

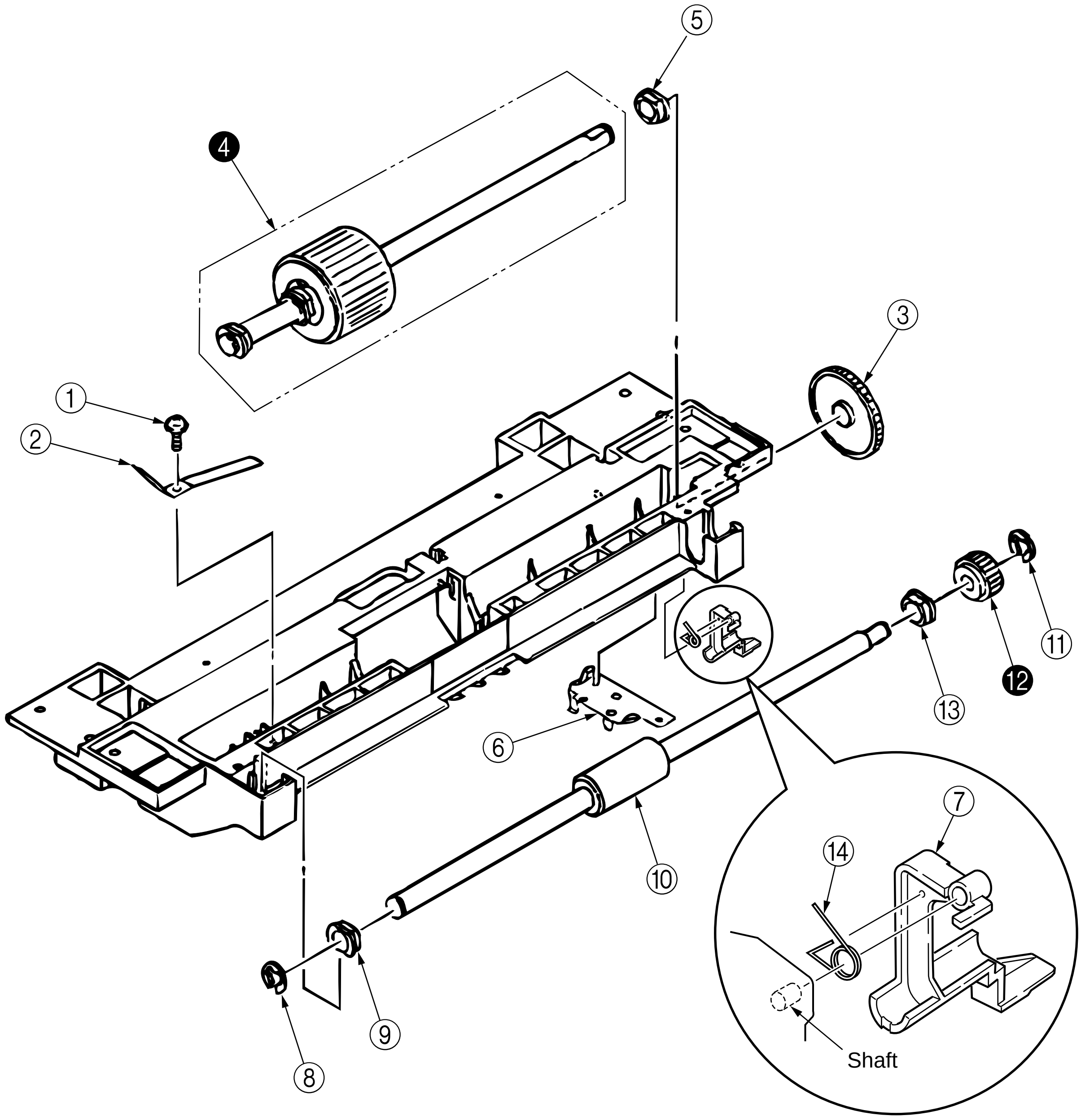
(1) Remove the pulse motor (see 3.3.1).
(2) Remove the connector ㉕ from the TQSB-2 PCB ㉖.
(3) Remove the screw ㉗ and remove the TQSB-2 PCB ㉖.

Note : Refer to Detall A in the previous page.

3.3.3 Hopping Roller Shaft Assy and One-way Clutch Gear

(1) Follow up to step (3) of 3.3.1 and remove the hopping frame assy.
(2) Remove the screw ① and remove the earth plate ②. Remove the sensor lever (T) ⑦ and remove the transion spring ⑭ and remove the ground plate ⑥. Remove the gear ③ and remove the metal bush ⑤ and hopping roller shaft assy ❹.
(3) Remove the E-ring ⑪ and remove the one-way clutch gear ⓬ on the right side of the feed roller ⑩.

Note : The metal bush ⑬ also comes off. Be careful not to lose it.



The tension lever and the sensor lever need concurrent replacing.

4. TROUBLESHOOTING

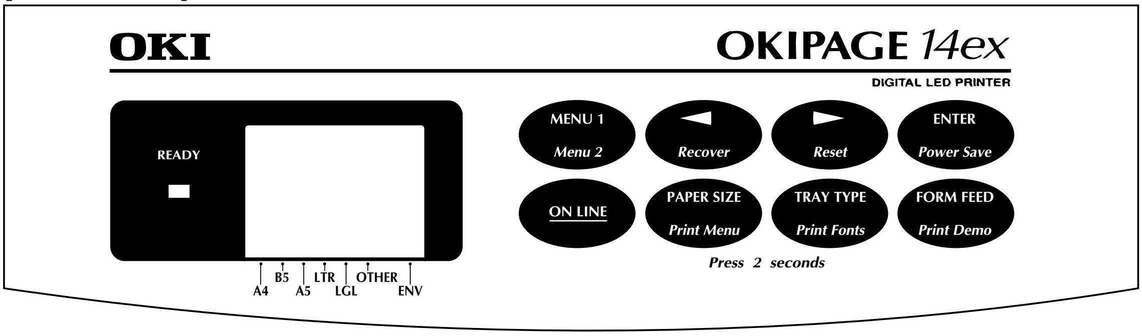
4.1 Precautions Prior to the Troubleshooting

(1) Go through the basic checking items provided in the Printer Handbook.
(2) Obtain detailed information concerning the problem from the user.
(3) Go through checking in the conditions similar to that in which the problem occurred.

4.2 Preparations for the Troubleshooting

(1) Display on the Operator panel
The status of the problem is displayed on the LCD (Liquid Crystal Display) on the Operator panel. Go through the appropriate troubleshooting procedures according to the messages displayed on the LCD.

[ODA/OEL/INT]



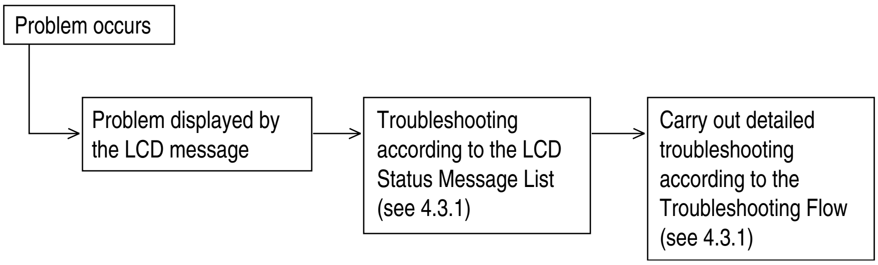
Status message display

Ready LED display

■ : OFF	☒ : BLINKING
▒ : ON	□ : UNDEFINED

4.3 Troubleshooting Method

When a problem occurs, go through the troubleshooting according to the following procedure.



4.3.1 LCD Status Message List

The listing of the statuses and problems displayed in the form of messages on the LCD is provided in Table 4-1.

Table 4-1

Classification	LCD Status Message	Description	Recovery method
Jam error (feeding)	TRAY2 FEED JAM	Notifies of occurrence of jam while the paper is being fed from High Capacity Second Paper Feeder.	• Check the paper in the High Capacity Second Paper Feeder. Carry out the recovery printing by opening and closing the cover, and turn the error display off. • When the problem occurs frequently, go through the Troubleshooting.
Jam error (ejection)	TRAY2 EXIT JAM	Notifies of occurrence of jam while the paper is being ejected from the printer.	• Check the paper in the printer. Carry out the recovery printing by opening and closing the cover, and turn the error display off.
Paper size error	TRAY2 SIZE ERR	Notifies of incorrect size paper feeding from High Capacity Second Paper Feeder.	• Check the paper in the High Capacity Second Paper Feeder. Also check to see if there was a feeding of multiple sheets. Carry out the recovery printing by opening and closing the cover, and turn the error display off.
Tray paper out	TRAY2 PAPEROUT	Notifies of no paper state of the High Capacity Second Paper feeder.	• Load the paper in High Capacity Second Paper Feeder.
Paper size request	TRAY2 OOO PAPER →REQUEST OOO : Paper size (A4, Letter, Legal, etc.) The 2nd line is shift-indicated.	Notifies of correct paper size for the High capacity Second Paper Feeder.	• Load the requested size paper in the High Capacity Second Paper Feeder.

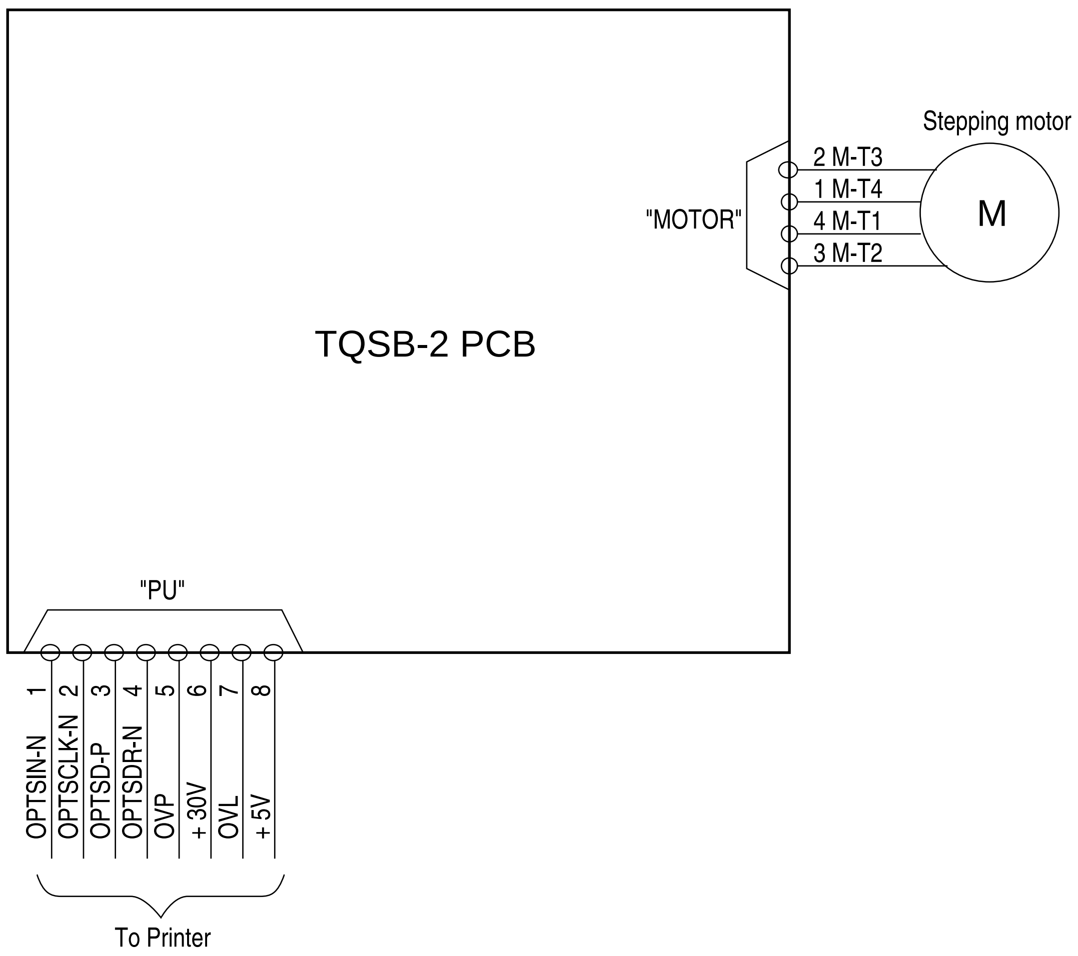
• (JAM error)

Paper Inlet Jam

- Does paper jam at the inlet when the power is turned on?
  - YES Is the paper located above the sensor plate (inlet)?
    - • YES Remove the paper.
  - NO Is the sensor plate (inlet) operating normally?
    - • NO Replace the sensor plate (inlet).
  - YES Replace the power supply/sensor board or inlet sensor.
- NO When the paper is fed in, does the paper inlet jam occur?
  - YES Is the paper being fed to above sensor plate (inlet)?
    - YES Is the sensor plate (inlet) operating normally?
      - • NO Replace the sensor plate. (inlet)
    - YES Clean the inlet sensor on the power supply/sensor board or replace the power supply/sensor board or inlet sensor.
  - NO Replace the hopping roller shaft assy or paper cassette.
- NO Are the hopping roller and feed roller rotating?
  - • YES Set the paper properly.
- NO Is the pulse motor turning?
  - • YES Replace the hopping roller shaft assy or one-way clutch gear on the feed roller assy.
- NO Is the connector being connected properly?
  - • NO Connect the connector properly.
- YES Check the coil resistance (approx. 4.3Ω) of the pulse motor. Is it normal?
  - • NO Replace the stepping motor.
- YES Replace the TQSB-2 PCB.

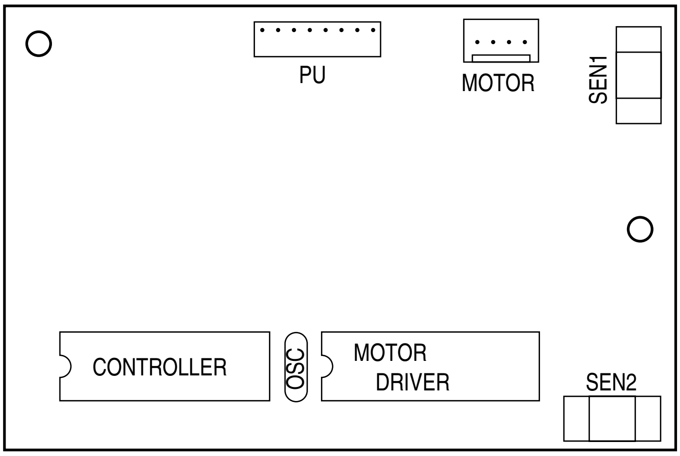
5. CONNECTION DIAGRAM

5.1 Interconnection Diagram



5.2 PCB Layout

TQSB-2 PCB



6. PARTS LIST

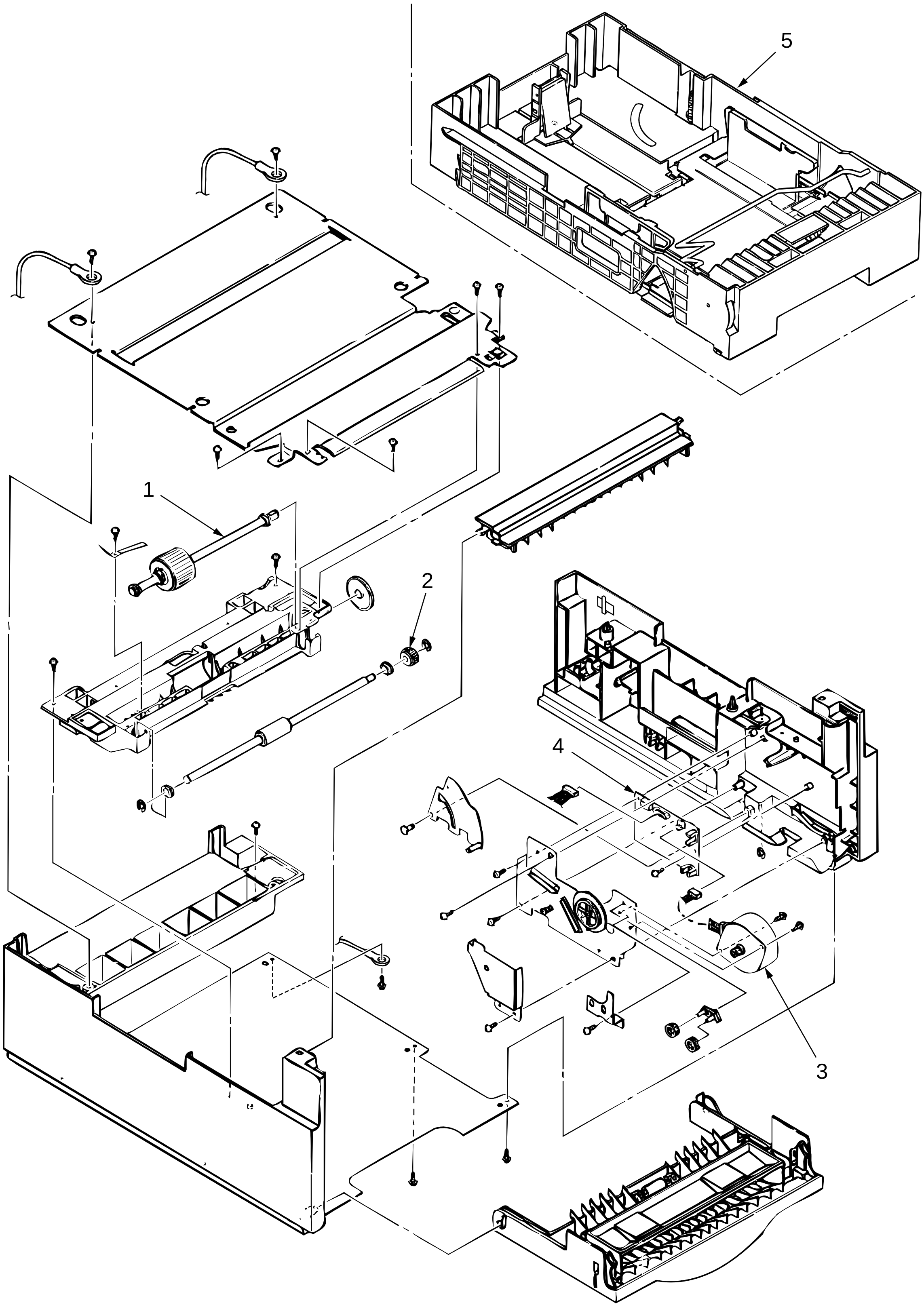
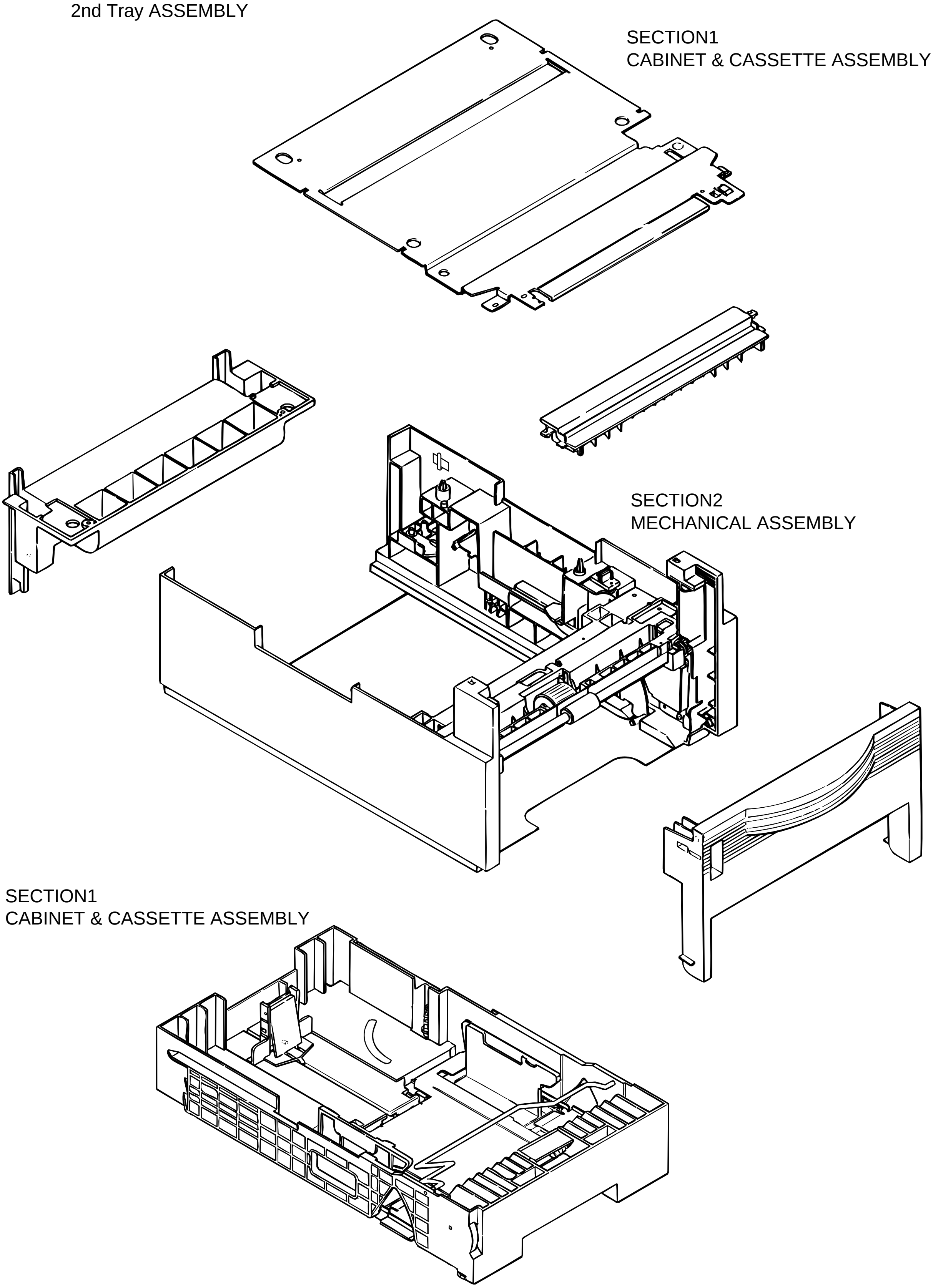


Figure 6-1 High Capacity Second Paper Feeder

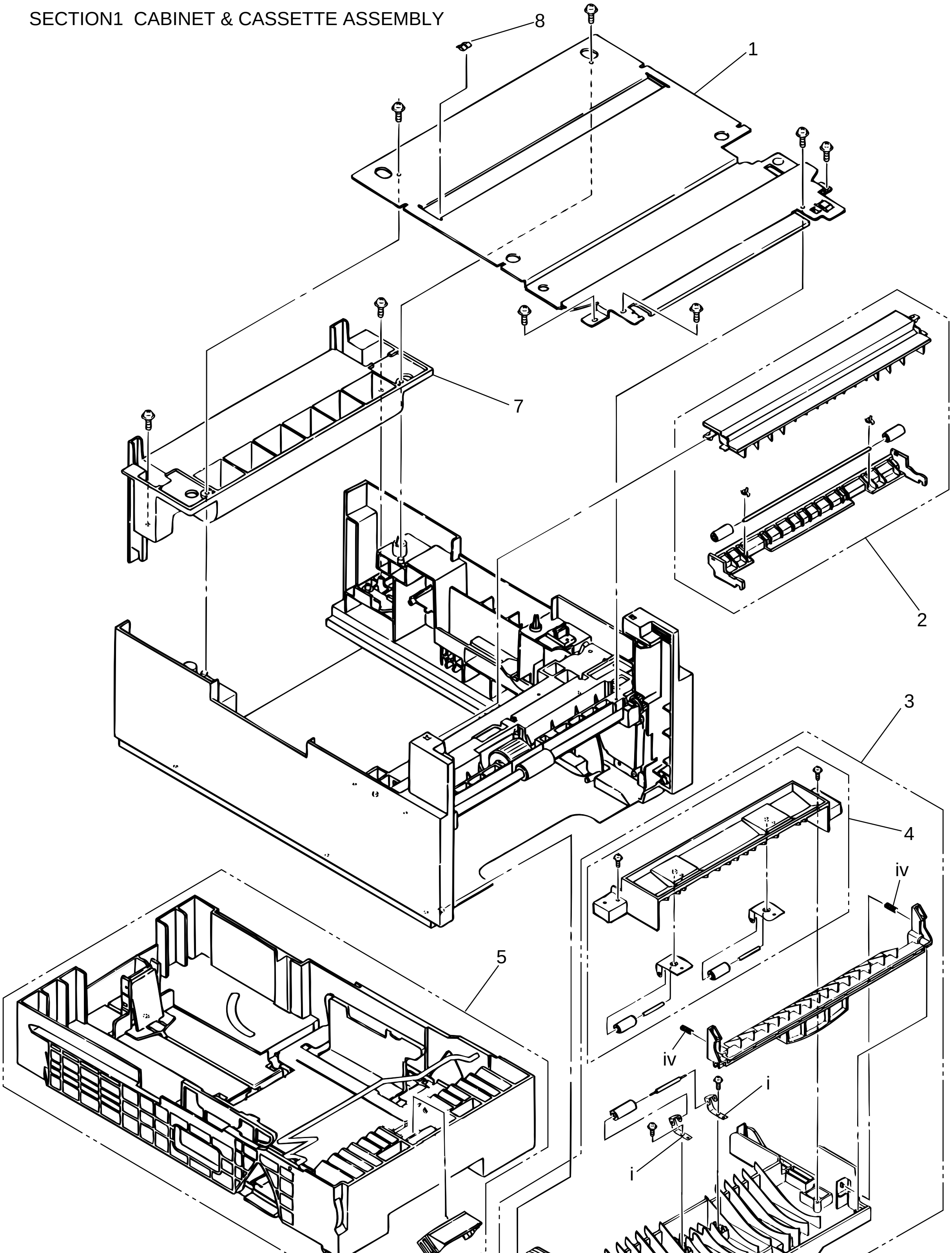
Table 6-1 High Capacity Paper Feeder

No.	Description	OKI-J Part No.	Q'ty	Remark
1	Hopping roller shaft assy	3PA4122-1367G001	1	
2	One-way clutch gear	4PB4122-1382P001	1	
3	Stepping motor	3PB4122-1399P001	1	
4	TQSB-2 PCB	4YA4046-1651G002	1	
5	Cassette assy (2nd tray)	1PA4122-1362G004	1	

2nd Tray ASSEMBLY



SECTION1 CABINET & CASSETTE ASSEMBLY



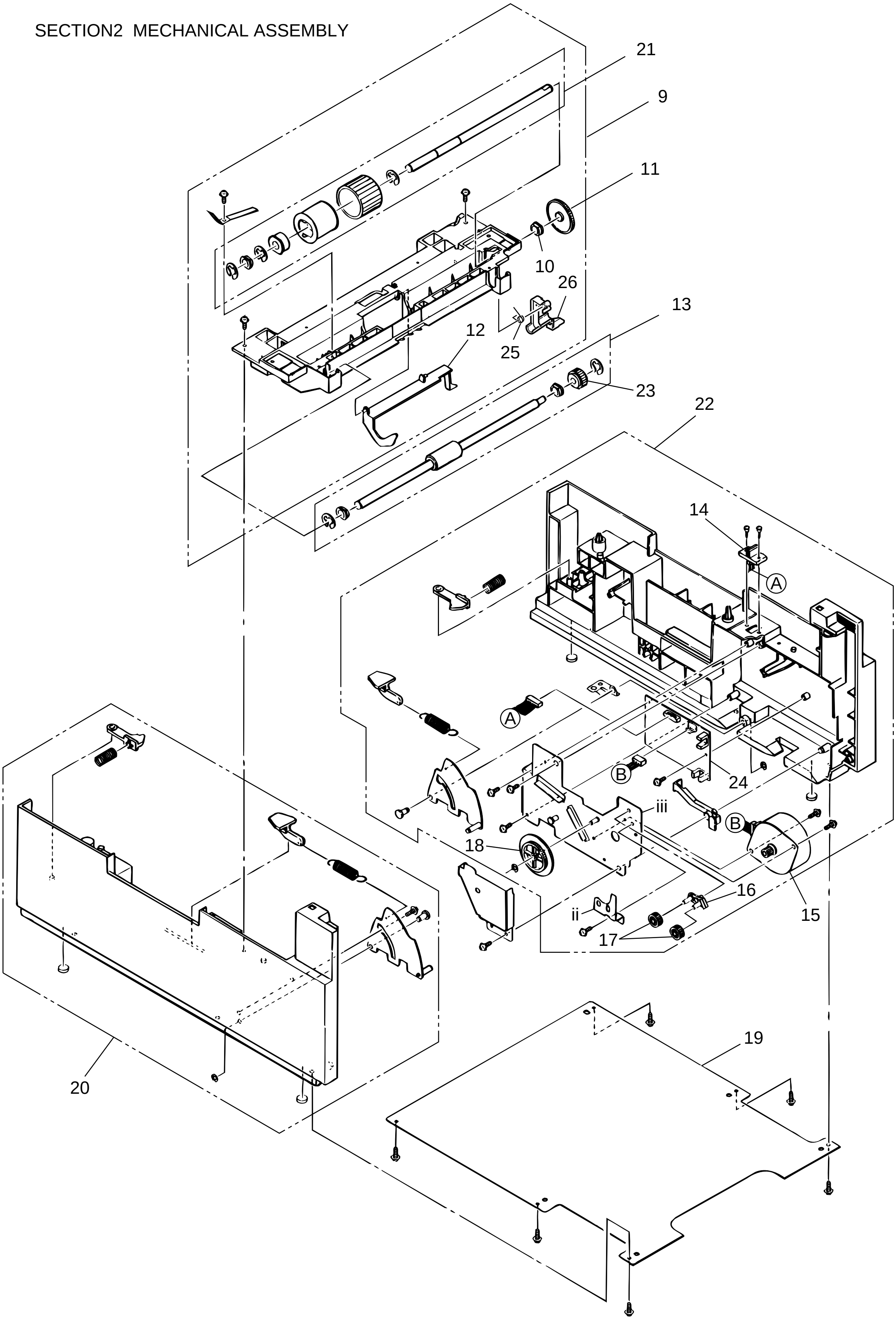

21
9
11
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26
13
12
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22
14
A
A
B
24
iii
B
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16
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ii
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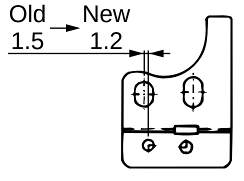
Table 6-2 2nd Tray Parts List

No.	Description	OKI Parts No.	Q'ty/U	500	1000
1	Plate, upper	1PP4122-1401P001	1	3	5
2	Sheet guide assembly	3PA4122-1370G001	1	3	5
3	Front cover assembly	1PA4122-1369G001*	1	3	5
4	Inner guide assembly	3PA4122-1371G001	1	3	5
5	Cassette assembly (2nd tray)	1PA4122-1362G004***	1	3	6
6	Separation frame assembly	4PA4120-1009G001	1	6	12
7	Cover, rear	1PP4122-1323P001	1	3	5
8	Stick finger	4PB4122-1441P001	1	3	5
9	Hopping flame assembly	1PA4122-1366G001	1	3	6
10	Bush, metal (ADF)	4PP3522-3568P001	1	3	5
11	Gear (z70)	4PP4122-1207P001	1	3	5
12	Lever, sensor (p)	3PP4122-1331P001	1	3	5
13	Feed roller assembly	3PA4122-1393G001	1	3	5
14	Cable & connector	3YS4111-3528P001	1	3	5
15	Stepping motor	3PB4122-1399P001	1	3	6
16	Bracket	4PP4122-1384G001	1	3	5
17	Gear (z24)	4PP4122-1383P001	2	3	5
18	Gear (z87/z60)	4PP4122-1226P001	1	3	5
19	Plate, bottom	2PP4122-1389P001	1	3	5
20	2nd cassette guide (L) assy	1PA4122-1365G001	1	3	6
21	Hopping roller assembly	3PA4122-1367G001	1	3	6
22	2nd cassette guide (R) assy	1YX4122-1364G002**	1	3	6
23	One-way clutch gear	4PB4122-1382P001	1	6	12
24	TQSB-2 PCB	4YA4046-1651G002	1	3	6
25	Spring, Tension	41804801	1	3	6
26	Lever, sensor (T)	PP4122-1416P001	1	3	6

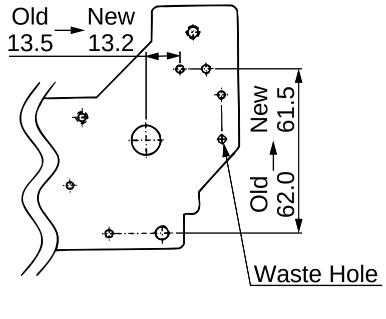
* For the rev. no. of the Parts List for the Front cover assembly should be applied No.6. The No.6 includes a change of Release spring [P194, iv]

** For the rev. no. of the Parts List for the 2nd cassette guide (R) assy should be applied No.5. In the No.5, the oval hole in the Guide Bracket [P195, ii] and the hole in the Motor Bracket [P195, iii] are relocated as shown in the following illustrations, respectively:

Guide Bracket Part No.:4PP4122-1392P001

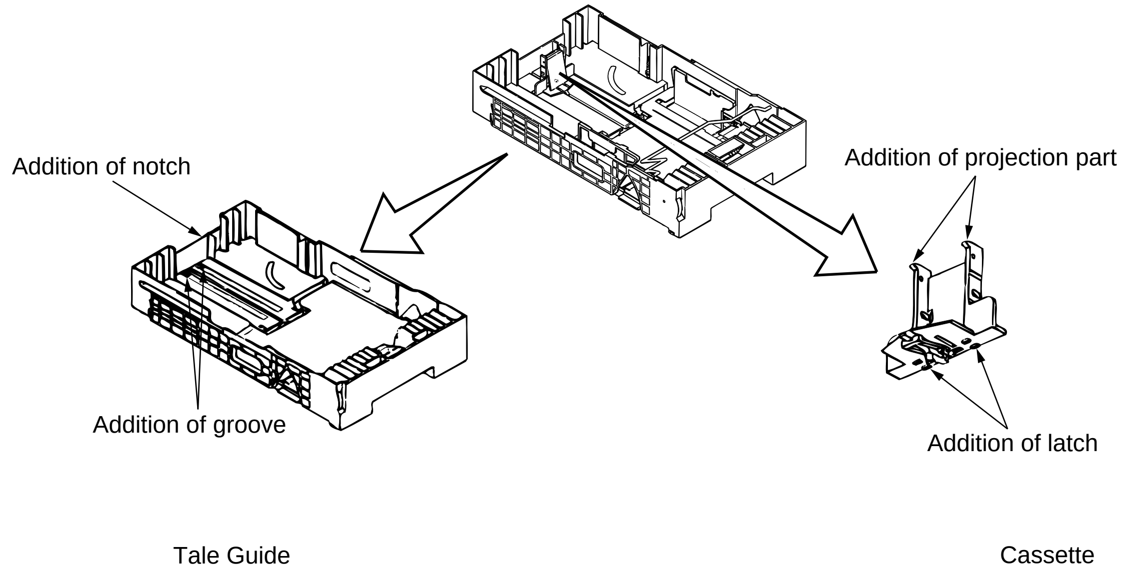


Motor Bracket Part No.:3PP4122-1345P001



Note : Parts Nos. 3 and 22 need concurrent replacing.

*** For the rev. no. of the Parts List for the Cassette assembly (2nd tray) should be applied No.10.
The No.10 includes a change of cassette and Tale Guide.



Note : Cassette and Tale Guide need concurrent replacing.